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174 282

mg

From: Seharaseyon, Jegatheesan
Sent: Wednesday, December 14, 2005 5:15 PM
To: STIC-Biotech/ChemLib
Subject: Re: 10/084706

Hi,
Please search SEQ ID NO: 2 of 10/084706.

Thanks.

J. Seharaseyon
Art Unit 1647
Remsen 4C61
Mailbox 4C70
Phone: (571)-272-0892
Fax: (571)-273-0892

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Searcher: _____
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Date Searcher Picked up: _____
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Online Time: _____

Type of Search
NA# _____ AA# _____
S/L: _____ Oligomer: _____
Encode/Transl: _____
Structure #: _____ Text: _____
Inventor: _____ Litigation: _____

Vendors and cost where applicable
STN: _____
DIALOG: _____
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Protein Sequence Searches - February 2005

All of the sequence databases on ABSS have recently been updated.

- Please note that the curators of the UniProt database have purged some temporary accession numbers from the most recent version of UniProt. These sequences have been assigned new permanent accession numbers. The new UniProt record may not contain the previous temporary accession number.
- If you encounter an accession number from an older search run against UniProt (results file extension **.rup**) that can no longer be found in the database, the permanent record with the new accession number can be found by searching the old accession number in the UniProt Protein Archive database (UniPARC) at:

<http://www.pir.uniprot.org/database/archive.shtml>

If you have any questions regarding this information or your results, please contact any STIC searcher.

When submitting sequence search results for scanning into IFW, please include a copy of this attachment to assist any future Examiners or members of the public who may encounter UniProt temporary accession numbers.

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GenCore version 5.1.1.6
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OM protein - protein search, using sw model

Run on: December 21, 2005, 14:09:47 ; Search time 227 Seconds
(without alignments)
515.937 Million cell updates/sec

Title: US-10-084-706-2
Perfect score: 874
Sequence: 1 MSYNLLGFLQRSSNFQCQL.....RVEILRNFFINRLTGVLRLN 166

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 2166443 seqs, 705528306 residues

Total number of hits satisfying chosen parameters: 2166443

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : Uniprot 05.80.*

1: uniprot_sprot.*

2: uniprot_trembl.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	DB	ID	Description
1	874	100.0	187	1	IFNB_HUMAN	P01574 homo sapien
2	874	100.0	187	2	Q5VWC9_HUMAN	Q5VWC9 homo sapien
3	832	95.2	187	1	IFNB_MACFA	O77812 macaca fasc
4	827	94.6	187	2	Q15943_HUMAN	Q15943 homo sapien
5	535.5	61.3	186	2	Q29412_PIG	Q29412 sus scrofa
6	534.5	61.2	186	2	Q681Q4_PIG	Q681Q4 sus scrofa
7	522.5	59.8	186	1	IFNB_FELCA	Q9n2j0 felis silve
8	492.5	56.4	186	1	IFNB2_BOVIN	P01576 bos taurus
9	487.5	55.8	186	1	IFNB_HORSE	P05012 equus cabal
10	458.5	52.5	186	1	IFNB3_BOVIN	P01577 bos taurus
11	440.5	50.4	186	1	IFNB1_BOVIN	P01578 bos taurus
12	342.5	39.2	182	1	IFNB_MOUSE	P01575 mus musculu
13	335.5	38.4	184	1	IFNB_RAT	P70499 rattus norv
14	308	35.2	183	2	Q7YRX6_MACEU	P01576 bos taurus
15	301	34.4	187	2	Q6XZW6_9MAMM	Q6XZW6 tachyglossu
16	289	33.1	183	2	Q7YRX8_MACEU	P05002 equus cabal
17	289	33.1	195	1	IFNB2_HORSE	P05001 equus cabal
18	278	31.8	183	2	Q7YRX7_MACEU	P05001 equus cabal
19	268	30.7	195	1	IFNB1_HORSE	Q46633 cervus elap
20	265.5	30.4	195	1	IFNT_CEREL	Q9gll5 bos taurus
21	265.5	30.4	195	2	Q9GLT5_BOVIN	Q86WN2 homo sapien
22	264.5	30.3	208	2	Q86WN2_HUMAN	P05003 equus cabal
23	264	30.2	184	1	IFNA1_HORSE	P05005 equus cabal
24	264	30.2	184	1	IFNA3_HORSE	P05006 equus cabal
25	264	30.2	184	1	IFNA4_HORSE	P05012 equus cabal
26	262.5	30.0	195	2	Q51S27_BOSGF	P05015 homo sapien
27	260.5	29.8	189	1	IFNB6_HUMAN	Q14618 homo sapien
28	260.5	29.8	189	2	Q5VV12_HUMAN	Q5VV12 homo sapien
29	260.5	29.8	189	2	Q5VV12_HUMAN	P05004 equus cabal
30	260	29.7	184	1	IFNA2_HORSE	Q5i828 bubalus bub
31	258.5	29.6	195	2	Q51S28_BUBBU	

32	257.5	29.5	195	1	IFNW1_BOVIN	P07352 bos taurus
33	256.5	29.3	172	1	IFNT2_BOVIN	P56830 bos taurus
34	255.5	29.2	172	2	Q6DUH3_BISBI	Q6duh3 bison bison
35	255.5	29.2	195	1	IFNT5_SHEEP	Q29429 ovies aries
36	255	29.2	182	2	Q6XZW7_9MAMM	Q6xzw7 tachyglossu
37	255	29.2	195	2	Q28844_RABIT	Q28844 oryctolagus
38	254.5	29.1	166	2	Q86UP4_HUMAN	Q86up4 homo sapien
39	254.5	29.1	188	2	Q6DUJ8_HUMAN	Q6duj8 homo sapien
40	254.5	29.1	195	2	Q6UZ47_CAPHI	Q6uz47 capra hircu
41	254	29.1	172	2	Q5U802_HUMAN	Q5u802 homo sapien
42	254	29.1	189	2	Q95J78_SAGOE	Q95j78 sequinus oe
43	254	29.1	195	1	IFNW1_HUMAN	P05000 homo sapien
44	254	29.1	195	2	Q5VWD0_HUMAN	Q5vwd0 homo sapien
45	253.5	29.0	188	1	IFNA2_HUMAN	P01563 homo sapien

ALIGNMENTS

RESULT 1

ID	IFNB_HUMAN	STANDARD;	PRT;	187 AA.
AC	P01574;			
DT	21-JUL-1986 (Rel. 01, Created)			
DT	21-JUL-1986 (Rel. 01, Last sequence update)			
DE	Interferon beta precursor (IFN-beta) (Fibroblast interferon)			
GN	Name=IFNB1; Synonyms=IFB, IFNB;			
OS	Homo sapiens (Human).			
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;			
OC	Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini; Hominidae;			
OC	Homo.			
OX	NCBI_TaxID=9606;			
RN	[1]			
RP	NUCLEOTIDE SEQUENCE.			
RX	MEDLINE=81198952; PubMed=6164984;			
RA	Lawn R.M., Adelman J., Franke A.E., Houck C.M., Gross M., Najarian R.,			
RA	Goeddel D.V.;			
RT	"Human fibroblast interferon gene lacks introns.";			
RL	Nucleic Acids Res. 9:1045-1052(1981).			
RN	[2]			
RP	NUCLEOTIDE SEQUENCE.			
RA	Ohno S., Taniguchi T.;			
RT	"Structure of a chromosomal gene for human interferon beta.";			
RL	Proc. Natl. Acad. Sci. U.S.A. 78:5305-5309(1981).			
RN	[3]			
RP	NUCLEOTIDE SEQUENCE.			
RX	MEDLINE=81005095; PubMed=6157601; DOI=10.1016/0378-1119(80)90138-9;			
RA	Taniguchi T., Ohno S., Fujii-Kuriyama Y., Muramatsu M.;			
RT	"The nucleotide sequence of human fibroblast interferon cDNA.";			
RL	Gene 10:11-15(1980).			
RN	[4]			
RP	NUCLEOTIDE SEQUENCE.			
RX	MEDLINE=80254542; PubMed=6157094;			
RA	Deruyck R., Content J., Declercq E., Volckaert G., Tavernier J.,			
RA	Devos R., Fiers W.;			
RT	"Isolation and structure of a human fibroblast interferon gene.";			
RL	Nature 285:542-547(1980).			
RN	[5]			
RP	NUCLEOTIDE SEQUENCE.			
RX	MEDLINE=81053720; PubMed=6159580;			
RA	Houghton M., Eaton M.A.W., Stewart A.G., Smith J.C., Doel S.M.,			
RA	Cartlin G.H., Lewis H.M., Patel T.P., Emtage J.S., Carey N.H.,			
RA	Porter A.G.;			
RT	"The complete amino acid sequence of human fibroblast interferon as deduced using synthetic oligodeoxynucleotide primers of reverse transcriptase.";			
RL	Nucleic Acids Res. 8:2885-2894(1980).			
RN	[6]			
RP	NUCLEOTIDE SEQUENCE.			
RX	MEDLINE=81053752; PubMed=6159584;			
RA	Goeddel D.V., Shepard H.M., Velverton E., Leung D., Crea R., Sloma A.,			
RA	Pestka S.;			

Db	22	MSYLLGLFQSSNFQCKLLWQNGRLVCLKDRNFDIPEEIKOLOQFOKEDAALTYI	81
Qy	61	EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL	120
Db	82	EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL	141
Qy	121	HLKRYYYGRILHYLKAKEYSHCAWTIVRVILRNFPINRLTGYLRN	166
Db	142	HLKRYYYGRILHYLKAKEYSHCAWTIVRVILRNFPINRLTGYLRN	187
RESULT 3			
IFNB	MACFA	STANDARD;	PRT; 187 AA.
ID	077812;		
DT	10-MAY-2005 (Rel. 47, Created)		
DT	10-MAY-2005 (Rel. 47, Last sequence update)		
DT	10-MAY-2005 (Rel. 47, Last annotation update)		
DE	Interferon beta precursor (IFN-beta).		
GN	Name=IFNB1; Synonyms=IFNB;		
OS	Macaca fascicularis (Crab eating macaque) (Cynomolgus monkey).		
OC	Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;		
OC	Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini;		
OC	Cercopithecoidea; Cercopithecinae; Macaca.		
OX	NCBI_TaxID=9541;		
RN	[1]		
RP	NUCLEOTIDE SEQUENCE.		
RX	MEDLINE=99156140; PubMed=10048395; DOI=10.1089/10430349950018878;		
RA	Matheux F., Le Grand R., Rousseau V., De Maeyer E., Dormont D.,		
RA	Laurent E.;		
RT	"Macaque lymphocytes transduced by a constitutively expressed		
RT	interferon beta gene display an enhanced resistance to SiVmac251		
RT	infection."		
RL	Hum. Gene Ther. 10:429-440(1999).		
CC	-1- FUNCTION: Has antiviral, antibacterial and anticancer activities.		
CC	-1- SUBUNIT: Monomer (By similarity).		
CC	-1- SUBCELLULAR LOCATION: Secreted.		
CC	-1- SIMILARITY: Belongs to the alpha/beta interferon family.		
CC	This Swiss-Prot entry is copyright. It is produced through a collaboration		
CC	between the Swiss Institute of Bioinformatics and the EMBL outstation -		
CC	the European Bioinformatics Institute. There are no restrictions on its		
CC	use as long as its content is in no way modified and this statement is not		
CC	removed.		
CC	EMBL; AJ011909; CAA09862.1; -; Genomic_DNA.		
DR	HSP; P01574; IAU1.		
DR	InterPro; IPR000471; Interferon_abd.		
DR	PANTHER; PTHR11691; Interferon_abd; 1.		
DR	Pfam; PF00143; Interferon; 1.		
DR	PRINTS; PR00266; INTERFERONAB.		
DR	ProDom; PD000550; Interferon_abd; 1.		
DR	SMART; SM00076; IFabd; 1.		
DR	PROSITE; PS00252; INTERFERON_A_B_D; 1.		
KW	Antiviral defense; Cytokine; Glycoprotein; Signal.		
FT	SIGNAL 1 21 By similarity.		
FT	CHAIN 22 187 Interferon beta.		
FT	CARBOHYD 101 101 N-linked (GlcNAc...) (Potential).		
FT	DISULFID 52 162 By similarity.		
SQ	SEQUENCE 187 AA; 22266 MW; 376AEF7332B7807 CRC64;		
Query Match 95.2%; Score 832; DB 1; Length 187;			
Best Local Similarity 94.0%; Pred. No. 4.6e-60;			
Matches 156; Conservative 7; Mismatches 3; Indels 0; Gaps 0;			
Qy	1	MSYLLGLFQSSNFQCKLLWQNGRLVCLKDRNFDIPEEIKOLOQFOKEDAALTYI	60
Db	22	MSYLLGLFQSSNFQCKLLWQNGRLVCLKDRNFDIPEEIKOLOQFOKEDAALTYI	81
Qy	61	EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL	120
Db	82	EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL	141

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QY 121 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
DB 142 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 187

RESULT 4
Q15943 HUMAN
ID Q15943_HUMAN PRELIMINARY; PRT; 187 AA.
AC Q15943;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 01-MAR-2004 (TrEMBLrel. 26, Last annotation update)
DE Interferon-beta precursor.
OS Homo sapiens (Human).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Euarchontoglires; Primates; Catarrhini; Hominidae;
OC Homo.
OX NCBI_TaxID=9606;
RN [1]_
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=83065590; PubMed=6183692;
RA Fiers W., Remaut E., Devos R., Cheroutre H., Contreras R.R.,
RA Gheysen D., Degraeve W.M., Stanssens P., Tavernier J., Taya Y.,
RA Content J.;
RT "The human fibroblast and human immune interferon genes and their
RT expression in homologous and heterogeneous cells.";
RL Philos. Trans. R. Soc. Lond., B, Biol. Sci. 299:29-38(1982).
CC -!- SUBCELLULAR LOCATION: Secreted (By similarity).
DR EMBL; M25460; AAC41702.1; -; mRNA.
DR HSSP; P01574; 1AUI.
DR GO; GO:0005576; C:extracellular region; IEA.
DR GO; GO:0003126; F:hematopoietin/interferon-class (D200-domain. . .; IEA.
DR GO; GO:0006952; P:defense response; IEA.
DR InterPro; IPR000471; Interferon_abd.
DR Pfam; PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR ProDom; PD000550; Interferon_abd; 1.
DR SMART; SM00076; IFabd; 1.
DR PROSITE; PS00252; INTERFERON_A_B_D; 1.
KW Antiviral defense; Cytokine; Signal.
FT SIGNAL 1 21 Potential.
FT CHAIN 22 187 interferon-beta.
SQ SEQUENCE 187 AA; 22251 MW; D8E5658694862061 CRC64;

Query Match 94.6%; Score 827; DB 2; Length 187;
Best Local Similarity 95.8%; Pred. No. 1.2e-59;
Matches 159; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 60
DB 22 MSYNLLGFLQSSNCCQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 81

QY 61 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 82 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 141

QY 121 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
DB 142 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 187

RESULT 5
Q29412 FIG
ID Q29412 FIG PRELIMINARY; PRT; 186 AA.
AC Q29412;
DT 01-NOV-1996 (TrEMBLrel. 01, Created)
DT 01-NOV-1996 (TrEMBLrel. 01, Last sequence update)
DT 10-MAY-2005 (TrEMBLrel. 30, Last annotation update)
DE Interferon-beta-1 precursor (Interferon-beta).
GN Names:interferon-beta-1; Synonyms=interferon-beta/ poIFN-beta;
OS Sus scrofa (Pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Laurasiatheria; Cetartiodactyla; Suina; Suidae;

QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 60
DB 22 MSYNLLGFLQSSNCCQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 81

QY 61 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 82 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 141

QY 121 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
DB 142 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 187

Query Match 94.6%; Score 827; DB 2; Length 187;
Best Local Similarity 95.8%; Pred. No. 1.2e-59;
Matches 159; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 60
DB 22 MSYNLLGFLQSSNCCQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 81

QY 61 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 82 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 141

QY 121 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
DB 142 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 187

Query Match 61.3%; Score 535.5; DB 2; Length 186;
Best Local Similarity 62.0%; Pred. No. 7.4e-36;
Matches 103; Conservative 28; Mismatches 34; Indels 1; Gaps 1;

QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 60
DB 22 MSYNLLGFLQSSNCCQCKLLWQLNGRLVCLKDRNFDIPBEIKOLOQFOKEDAALTY 81

QY 61 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 82 EMLQNIFAIFRODSSSTGNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 140

QY 121 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
DB 141 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 186

RESULT 6
Q681Q4 FIG
ID Q681Q4 FIG PRELIMINARY; PRT; 186 AA.
AC Q681Q4;
DT 25-OCT-2004 (TrEMBLrel. 28, Created)
DT 25-OCT-2004 (TrEMBLrel. 28, Last sequence update)
DT 25-OCT-2004 (TrEMBLrel. 28, Last annotation update)
DE Interferon beta protein.
OS Sus scrofa (Pig).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Laurasiatheria; Cetartiodactyla; Suina; Suidae;
OC Sus.
OX NCBI_TaxID=9823;
RN [1]_
RP NUCLEOTIDE SEQUENCE.
RA Qian P., Peng G.Q., Li X.M., Yao Q.X., Xu Z.F., Guo D.C., Chen H.C.;
RT "Clone and analysis of meishan porcine interferon beta gene.";
RL Submitted (JUL-2004) to the EMBL/GenBank/DBJ databases.
CC -!- SUBCELLULAR LOCATION: Secreted (By similarity).
DR EMBL; AY687281; AAT98375.1; -; mRNA.
DR GO; GO:0005576; C:extracellular region; IEA.
DR GO; GO:0003126; F:hematopoietin/interferon-class (D200-domain. . .; IEA.
DR GO; GO:0006952; P:defense response; IEA.
DR InterPro; IPR000471; Interferon_abd.

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DR Pfam: PF00143; Interferon; 1.  
DR PRINTS; PR00266; INTERFERONAB.  
DR ProDom; PD000550; Interferon_abd; 1.  
DR SMART; SM00076; IFabD; 1.  
DR PROSITE; PS00252; INTERFERON_A_B_D; 1.  
KW Antiviral defense; Cytokine.  
SQ SEQUENCE 186 AA; 21950 MW; 79D70E53C3ADD6DC CRC64;  
  
Query Match 61.2%; Score 534.5; DB 2; Length 186;  
Best Local Similarity 62.0%; Pred. No. 8.9e-36;  
Matches 103; Conservative 28; Mismatches 34; Indels 1; Gaps 1;  
  
QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLLEYCLKDRNFDIPEIKQLQFOKEDAAITY 60  
Db 22 MSYDVLRYQSSNLACQKLEQLPGTPQYCLDRNWFPEIMQPPQFQKEDAVLIH 81  
QY 61 EMLQNIFAIPRODSSSTGWNETIVNLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120  
Db 82 EMLQIFGILRRNFSSTGWNETIKTILVELDQMDDETILEEIMEENFPRGD-MTIL 140  
QY 121 HLKRYGRILHYLKAKYSHCANTIVRVVEILRNFIINRLTGYLRN 166  
Db 141 HLKXYLSILQYLKSKYRSCAWTVVQVEILRNFSFLNRLTYLRN 186  
  
RESULT 7  
ID IFNB_FELCA STANDARD; PRT; 186 AA.  
AC Q9N2J0;  
DT 16-OCT-2001 (Rel. 40, Created)  
DT 16-OCT-2001 (Rel. 40, Last sequence update)  
DT 10-MAY-2005 (Rel. 47, Last annotation update)  
DE Interferon beta precursor (IFN-beta).  
GN Names=IFNB1; Synonyms=IFNB;  
OS Felis silvestris catus (Cat).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Laurasiatheria; Carnivora; Fissipedia; Felidae;  
OC Felinae; Felis.  
OX NCBI_TaxID=9685;  
RN [1]  
RP NUCLEOTIDE SEQUENCE.  
RA Murakami Y., Kubota T., Mochizuki M., Kishi M.;  
RT "Genetic structure of feline interferon beta";  
RL Submitted (DEC-1998) to the EMBL/GenBank/DBJ databases.  
CC -!- FUNCTION: Has antiviral, antibacterial and anticancer activities  
CC (By similarity).  
CC -!- SUBUNIT: Monomer (By similarity).  
CC -!- SUBCELLULAR LOCATION: Secreted.  
CC -!- SIMILARITY: Belongs to the alpha/beta interferon family.  
CC  
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CC removed.  
CC EMBL; AB021707; BAA93629.1; -; Genomic_DNA.  
CC HSSP; P01574; 1AU1.  
CC InterPro; IPR000471; Interferon_abd.  
CC PANTHER; PTHR11691; Interferon_abd; 1.  
CC Pfam; PF00143; Interferon; 1.  
CC PRINTS; PR00266; INTERFERONAB.  
CC ProDom; PD000550; Interferon_abd; 1.  
CC PROSITE; PS00252; INTERFERON_A_B_D; 1.  
KW Antiviral defense; Cytokine; Glycoprotein; Signal.  
FT SIGNAL 1 21  
FT CHAIN 22 186 Interferon beta.  
FT CARBOHYD 46 46 N-linked (GlcNAc... ) (Potential).  
FT CARBOHYD 101 101 N-linked (GlcNAc... ) (Potential).  
FT CARBOHYD 131 131 N-linked (GlcNAc... ) (Potential).  
FT CARBOHYD 136 136 N-linked (GlcNAc... ) (Potential).  
FT DISULFID 52 161 By similarity.  
SQ SEQUENCE 186 AA; 22188 MW; 25C359B1808AC862 CRC64;  
  
Query Match 59.8%; Score 522.5; DB 1; Length 186;  
Best Local Similarity 61.4%; Pred. No. 8.5e-35;  
Matches 102; Conservative 27; Mismatches 36; Indels 1; Gaps 1;  
  
QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLLEYCLKDRNFDIPEIKQLQFOKEDAAITY 60  
Db 22 VSYKLLGFLQSSNLECEQLLVNLRNARTSKYCLKDRNWFPEIKKSQRFQKEAILVN 81  
QY 61 EMLQNIFAIPRODSSSTGWNETIVNLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120  
Db 82 EMQKIFNIFSSSTGWNETIVNLLATLHWQKEHLETLIEEIMEENFTWDN-TTIL 140  
QY 121 HLKRYGRILHYLKAKYSHCANTIVRVVEILRNFIINRLTGYLRN 166  
Db 141 NLKXYLRIVRYLKAKYSVCATVVHAEILRNFFFLRLTYLQN 186  
  
RESULT 8  
ID IFNB2_BOVIN STANDARD; PRT; 186 AA.  
AC P01576;  
DT 21-JUL-1986 (Rel. 01, Created)  
DT 21-JUL-1986 (Rel. 01, Last sequence update)  
DT 10-MAY-2005 (Rel. 47, Last annotation update)  
DE Interferon beta-2 precursor.  
GN Name=IFNB2;  
OS Bos taurus (Bovine).  
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;  
OC Mammalia; Eutheria; Laurasiatheria; Cetartiodactyla; Ruminantia;  
OC Pecora; Bovidae; Bovinae; Bos.  
OX NCBI_TaxID=9913;  
RN [1]  
RP NUCLEOTIDE SEQUENCE.  
RA Leung D.W., Capon D.J., Goeddel D.V.;  
RT "The structure and bacterial expression of three distinct bovine  
RT interferon-beta genes";  
RL Biotechnology (N.Y.) 2:458-464(1984).  
CC -!- FUNCTION: Has antiviral, antibacterial and anticancer activities.  
CC -!- SUBUNIT: Monomer.  
CC -!- SUBCELLULAR LOCATION: Secreted.  
CC -!- SIMILARITY: Belongs to the alpha/beta interferon family.  
CC  
CC This Swiss-Prot entry is copyright. It is produced through a collaboration  
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -  
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CC use as long as its content is in no way modified and this statement is not  
CC removed.  
CC EMBL; M15478; AAA30580.1; -; Genomic_DNA.  
CC PIR; A01840; IYBOB2.  
CC HSSP; P01574; 1AU1.  
CC InterPro; IPR000471; Interferon_abd.  
CC PANTHER; PTHR11691; Interferon_abd; 1.  
CC Pfam; PF00143; Interferon; 1.  
CC PRINTS; PR00266; INTERFERONAB.  
CC ProDom; PD000550; Interferon_abd; 1.  
CC PROSITE; PS00252; INTERFERON_A_B_D; 1.  
KW Antiviral defense; Cytokine; Glycoprotein; Multigene family; Signal.  
FT SIGNAL 1 21  
FT CHAIN 22 186 Interferon beta-2.  
FT CARBOHYD 131 131 N-linked (GlcNAc... ) (Potential).  
FT CARBOHYD 173 173 N-linked (GlcNAc... ) (Potential).  
FT DISULFID 52 161 Probable.  
SQ SEQUENCE 186 AA; 22319 MW; D9F257C6E3250480 CRC64;  
  
Query Match 56.4%; Score 492.5; DB 1; Length 186;  
Best Local Similarity 57.9%; Pred. No. 2.4e-32;  
Matches 95; Conservative 30; Mismatches 38; Indels 1; Gaps 1;  
  
QY 2 SYNLLGFLQSSNFQCKLLWQNGRLLEYCLKDRNFDIPEIKQLQFOKEDAAITY 61  
Db 23 SYSLRPFQQRSLALCOKLLRQLPSTPHCLARMDFQMPPEMKQAQFOKEDAILVIYE 82
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QY 62 MLQNIPIAFIPRODSSSTGNETIVENLLANNVYHOINHLKTVLEEKLEKEDFTRGKLMSSLH 121
DB 83 MLQIIFNLTDRFSSTGNETIIEEDLLLEPIEQMHLEPIQKEIMQKQNTMGD-TTVLH 141

QY 122 LKRYGRILHLYLKAKYSHCAWTIVRVEILRNFFYNRLTGYLR 165
DB 142 LKRYVNLVQYLSKSYNCAMTVVRVQILRNFSFTRUTGYLR 185

RESULT 9
ID IFNB_HORSE STANDARD; PRT; 186 AA.
AC P050T2;
DT 13-AUG-1987 (Rel. 05, Created)
DT 13-AUG-1987 (Rel. 05, Last sequence update)
DE 10-MAY-2005 (Rel. 47, Last annotation update)
DE Interferon beta precursor (IFN-beta).
GN Name=IFNB1; Synonyms=IFNB;
OS Equus caballus (Horse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Laurasiatheria; Perissodactyla; Equidae; Equus.
OX NCBI_TaxID=9796;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=87053170; PubMed=3022999;
RA Himmeler A., Hauptmann R., Adolf G.R., Swetly P.;
RT "Molecular cloning and expression in Escherichia coli of equine type I
interferons."
RL DNA 5:345-356(1986).
CC -!- FUNCTION: Has antiviral, antibacterial and anticancer activities.
CC -!- SUBUNIT: Monomer.
CC -!- SIMILARITY: Belongs to the alpha/beta interferon family.
CC -!- SIMILARITY: Belongs to the alpha/beta interferon family.
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use as long as its content is in no way modified and this statement is not
removed.
CC EMBL; M14546; AAA30954.1; -; Genomic_DNA.
DR PIR; G24912; IVHOB1.
DR HSSP; P01574; 1AU1.
DR InterPro; IPR000471; Interferon abd.
DR PANTHER; PTHR11691; Interferon_abd; 1.
DR Pfam; PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR ProDom; PD000550; Interferon abd; 1.
DR ProSITE; PS00252; INTERFERON_A_B_D; 1.
KW Antiviral defense; Cytokine; Glycoprotein; Signal.
FT SIGNAL 1 21
FT CHAIN 22 186 Interferon beta.
FT CARBOHYD 101 101 N-linked (GlcNAc... ) (Potential).
FT CARBOHYD 136 136 N-linked (GlcNAc... ) (Potential).
FT DISULFID 52 161 By similarity.
SQ SEQUENCE 186 AA; 21882 MW; AE9F3ADF006EB6C CRC64;

Query Match 55.8%; Score 487.5; DB 1; Length 186;
Best Local Similarity 59.0%; Pred. No. 6.1e-32;
Matches 98; Conservative 27; Mismatches 40; Indels 1; Gaps 1;

QY 1 MSYNLGFTQRSNFCOKLLMOLNGRLEYCLKDRNFDPBEIKOLOQFOKEDAAITY 60
DB 22 VNYDLRSQLRSSNSACLMLRLQNGAPQPCEDTNFQVPEIEAQFOKEDAAITY 81

QY 61 EMLQNIPIAFIPRODSSSTGNETIVENLLANNVYHOINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 82 EMLQHTWRIFRRNFSTGNETIIEEDLLLEVEHLQMDRLNLEELNEEESSTWGN-TTIL 140

QY 121 HLKRYGRILHLYLKAKYSHCAWTIVRVEILRNFFYNRLTGYLR 166
DB 141 RLKRYGRISQYLKAKYSHCAWTIVQAEMLRNLAFLNGITDYLN 186

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RESULT 10
ID IFNB3_BOVIN STANDARD; PRT; 186 AA.
AC P01577;
DT 21-JUL-1986 (Rel. 01, Created)
DT 21-JUL-1986 (Rel. 01, Last sequence update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DE Interferon beta-3 precursor.
GN Name=IFNB3;
OS Bos taurus (Bovine).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Laurasiatheria; Cetartiodactyla; Ruminantia;
OC Pecora; Bovidae; Bovinae; Bos.
OX NCBI_TaxID=9913;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RA Leung D.W., Capon D.J., Goeddel D.V.;
RT "The structure and bacterial expression of three distinct bovine
interferon-beta genes."
RL Biotechnology (N.Y.) 2:458-464(1984).
CC -!- FUNCTION: Has antiviral, antibacterial and anticancer activities.
CC -!- SUBUNIT: Monomer.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- SIMILARITY: Belongs to the alpha/beta interferon family.
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
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the European Bioinformatics Institute. There are no restrictions on its
use as long as its content is in no way modified and this statement is not
removed.
CC EMBL; M15479; AAA30581.1; -; Genomic_DNA.
DR PIR; A01841; IVBOB3.
DR HSSP; P01574; 1AU1.
DR InterPro; IPR000471; Interferon abd.
DR PANTHER; PTHR11691; Interferon_abd; 1.
DR Pfam; PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR ProDom; PD000550; Interferon abd; 1.
DR ProSITE; PS00252; INTERFERON_A_B_D; 1.
KW Antiviral defense; Cytokine; Glycoprotein; Multigene family; Signal.
FT SIGNAL 1 21
FT CHAIN 22 186 Interferon beta-3.
FT CARBOHYD 131 131 N-linked (GlcNAc... ) (Potential).
FT CARBOHYD 173 173 N-linked (GlcNAc... ) (Potential).
FT DISULFID 52 161 Probable.
SQ SEQUENCE 186 AA; 22060 MW; 1D10111EBE1A65D CRC64;

Query Match 52.5%; Score 458.5; DB 1; Length 186;
Best Local Similarity 53.3%; Pred. No. 1.4e-29;
Matches 88; Conservative 35; Mismatches 41; Indels 1; Gaps 1;

QY 2 SYNLGFTQRSNFCOKLLMOLNGRLEYCLKDRNFDPBEIKOLOQFOKEDAAITY 61
DB 23 SYSLLRFQRRSAEVCQKLLGQLHSTPQCLAEKMDFOVPEMNAQAFKEDAILVIYE 82

QY 62 MLQNIPIAFIPRODSSSTGNETIVENLLANNVYHOINHLKTVLEEKLEKEDFTRGKLMSSLH 121
DB 83 MLQIIFNLTDRFSSTGNETIIEEDLLLEVEHLQMDRLNLEELNEEESSTWGN-TTVLH 141

QY 122 LKRYGRILHLYLKAKYSHCAWTIVRVEILRNFFYNRLTGYLR 166
DB 142 LKRYVNLVQYLSKSYNCAMTVVRVQILRNFSFTRUTGYLR 186

RESULT 11
ID IFNB1_BOVIN STANDARD; PRT; 186 AA.
AC P01578;
DT 21-JUL-1986 (Rel. 01, Created)
DT 21-JUL-1986 (Rel. 01, Last sequence update)

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DT 10-MAY-2005 (Rel. 47, Last annotation update)
DE Interferon beta-1 precursor.
GN Name=IFNB1;
OS Bos taurus (Bovine).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Laurasiatheria; Cetartiodactyla; Ruminantia;
OC Pecora; Bovidae; Bovinae; Bos.
OX NCBI_TaxID=9913;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RA Leung D.W., Capon D.J., Goeddel D.V.;
RT "The structure and bacterial expression of three distinct bovine
RL Biotechnology (N.Y.) 2:458-464(1984).
CC -1- FUNCTION: Has antiviral, antibacterial and anticancer activities.
CC -1- SUBUNIT: Monomer.
CC -1- SIMILARITY: Belongs to the alpha/beta interferon family.
CC This Swiss-Prot entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use as long as its content is in no way modified and this statement is not
CC removed.
DR EMBL; M15477; AAA30579.1; -; Genomic_DNA.
DR PIR; A01842; IYBOB1.
DR HSSP; P01574; IAU1.
DR InterPro; IPR000471; Interferon_abd.
DR PANTHER; PTHR11691; Interferon_abd. 1.
DR Pfam; PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR PRODOM; PD000550; Interferon_abd. 1.
DR PROSITE; PS00252; INTERFERON_A_B_D; 1.
KW Antiviral defense; Cytokine; Glycoprotein; Multigene family; Signal.
FT SIGNAL 21
FT CHAIN 22 186 Interferon beta-1.
FT CARBOHYD 131 131 N-linked (GLNAC: .) (Potential).
FT CARBOHYD 173 173 N-linked (GLNAC: .) (Potential).
FT DISULFID 52 161 Probable.
SQ SEQUENCE 186 AA; 22195 MW; F9060C07EA415B9C CRC64;
Query Watch 50.4%; Score 440.5; DB 1; Length 186;
Best Local Similarity 51.5%; Pred No. 4.2e-28;
Matches 85; Conservative 36; Mismatches 43; Indels 1; Gaps 1;
Qy 2 SYLLGLFQSSNFQCKLWQLNGRLCYCLKDRMNFDPPEIKQLQFQKEDAAITYE 61
Db 23 SYLLRFQQRSLKCECKLLQQLPSTQSHCLREARMDPQPEEMKQEQQFQKEDAILVWE 82
Qy 62 MLQNFPAIFRODSSSTGWNETHVENLLANYVHQLNHLKTVLEKLEKEDTRGKLMSLLH 121
Db 83 VLQHFGLTRDFSSTGWSSETIIBDLKELYQWQNRLOPQKEIMQKQNSTTEDTIVP-H 141
Qy 122 LKRYVGRILYHLKAKYSHCAWTIVRVEILNRFNRLGYLRN 166
Db 142 LGRYFNLMOYLESKEYDCAWTVVQVQLITNVGFLMRLTGIVRD 186
RESULT 12
IFNB_MOUSE
ID IFNB_MOUSE STANDARD; PRT; 182 AA.
AC P01575;
DT 21-JUL-1986 (Rel. 01, Created)
DT 21-JUL-1986 (Rel. 01, Last sequence update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DE Interferon beta precursor (IFN-beta).
GN Name=ifnb1; Synonym=IFb, Ifnb;
OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Sciurognathi;
OC Muridae; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
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RN NUCLEOTIDE SEQUENCE.
RP MEDLINE=83265757; PubMed=6688252;
RA Higashi Y., Sokawa Y., Watanabe Y., Kawade Y., Ohno S., Takaoka C.,
RA Taniguchi T.;
RT "Structure and expression of a cloned cDNA for mouse interferon-
RT beta.";
RL J. Biol. Chem. 258:9522-9529(1983).
RN [2]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=89263735; PubMed=2726460;
RA Kuga T., Fujita T., Taniguchi T.;
RT "Nucleotide sequence of the mouse interferon-beta gene.";
RL Nucleic Acids Res. 17:3291-3291(1989).
RN [3]
RP NUCLEOTIDE SEQUENCE.
RX MEDLINE=89125582; PubMed=3221389;
RA Vodjdani G., Coulombel C., Doly J.;
RT "Structure and characterization of a murine chromosomal fragment
RT containing the interferon beta gene.";
RL J. Mol. Biol. 204:221-231(1988).
RN [4]
RP STRUCTURE OF CARBOHYDRATES.
RX MEDLINE=88196115; PubMed=3360010;
RA Civas A., Fournet B., Coulombel C., le Roscouet D., Honvault A.,
RA Petek F., Montreuil J., Doly J.;
RT "Purification and carbohydrate structure of natural murine interferon-
RT beta.";
RL Eur. J. Biochem. 173:311-316(1988).
RN [5]
RP X-RAY CRYSTALLOGRAPHY (2.75 ANGSTROMS).
RA Senda T., Matsuda S., Kurihara H., Nakamura K.T., Kawano G.,
RA Shimizu H., Mizuno H., Mitsui Y.;
RT "Three-dimensional structure of recombinant murine interferon-beta.";
RL Proc. Jpn. Acad., B, Phys. Biol. Sci. 66:77-80(1990).
RN [6]
RP X-RAY CRYSTALLOGRAPHY (2.6 ANGSTROMS).
RX MEDLINE=92371425; PubMed=1505514;
RA Senda T., Shimazu T., Matsuda S., Kawano G., Shimizu H.,
RA Nakamura K.T., Mitsui Y.;
RT "Three-dimensional crystal structure of recombinant murine interferon-
RT beta.";
RL EMBO J. 11:3193-3201(1992).
RN [7]
RP X-RAY CRYSTALLOGRAPHY (2.15 ANGSTROMS).
RX MEDLINE=96028219; PubMed=7473712;
RA Senda T., Saitoh S.-i., Mitsui Y.;
RT "Refined crystal structure of recombinant murine interferon-beta at
RT 2.15-A resolution.";
RL J. Mol. Biol. 253:187-207(1995).
CC -1- FUNCTION: Has antiviral, antibacterial and anticancer activities.
CC -1- SUBUNIT: Monomer.
CC -1- SUBCELLULAR LOCATION: Secreted.
CC -1- PTM: This beta interferon does not have a disulfide bond.
CC -1- SIMILARITY: Belongs to the alpha/beta interferon family.
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CC use as long as its content is in no way modified and this statement is not
CC removed.
DR EMBL; K00020; AAA37891.1; -; mRNA.
DR EMBL; X14455; CAA32625.1; -; Genomic DNA.
DR EMBL; X14029; CAA32190.1; -; Genomic DNA.
DR PIR; S02020; IVMSB.
DR PDB; 1IFA; X-ray; @=24-181.
DR PDB; 1WU3; X-ray; I=22-182.
DR PDB; 2HIF; Model; @=24-182.
DR Ensemble; ENSMUSG0000048806; Mus musculus.
DR MGI; MGI:107657; Ifnb1.
DR GO; GO:0005615; C:extracellular space; TAS.
DR GO; GO:0005125; F:cytokine activity; IDA.
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DR GO: 0042830; P-defense response to pathogenic bacteria; IDA.
DR InterPro; IPR000471; Interferon_abd.
DR PANTHER; PTHR11691; Interferon; 1.
DR Pfam; PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR ProDom; PD000550; Interferon abd; 1.
DR PROSITE; PS00252; INTERFERON_A_B_D; 1.
KW 3D-structure; Antiviral defense; Cytokine; Glycoprotein; Signal.
FT SIGNAL 1 21
FT CHAIN 22 182 Interferon beta.
FT CARBOHYD 50 50 N-linked (GlcNAc . .)
FT CARBOHYD 90 90 N-linked (GlcNAc . .)
FT CARBOHYD 97 97 N-linked (GlcNAc . .)
FT HELIX 27 29
FT HELIX 30 42
FT TURN 43 44
FT HELIX 46 50
FT TURN 62 63
FT TURN 69 71
FT HELIX 72 89
FT TURN 111 112
FT TURN 112 116
FT HELIX 113 116
FT TURN 117 119
FT TURN 124 125
FT TURN 127 128
FT HELIX 130 132
FT TURN 133 134
FT HELIX 135 151
FT TURN 152 154
FT HELIX 156 176
FT TURN 177 182
SQ SEQUENCE 182 AA; 22127 MW; 8C4C32947FD1B917 CRC64;

Query Match 39.2%; Score 342.5; DB 1; Length 182;
Best Local Similarity 46.4%; Pred. No. 4.1e-20;
Matches 77; Conservative 27; Mismatches 57; Indels 5; Gaps 3;

QY 1 MSYNLGFQSRNSFCQKLLWOLNGRLEYCLKDRNFPDIPEIKQLQOFKEDAAALTY 60
Db 22 INYKQLQOERTNIRKQELLEQLNGKIN--LTYRADFKIPMEM--TERMQSKSYTAFAIQ 77

QY 61 EMLQNIFAIFQDSSSTGNETIVENLIANYVHOINHLKTVLEEKLEKEDFTRGKLMSSL 120
Db 78 EMLQNVLFVRNFSSTGNETIVRLDLHQQTFLKTVLEEK--QERLTWTSTTTL 136

QY 121 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
Db 137 HLKSYVVRQYLYKMKYNSYAMVVRVRAEIRFNELIIRLTNRNFGN 182

RESULT 13
IFNB RAT STANDARD; PRT; 184 AA.
AC P70459;
DT 01-NOV-1997 (Rel. 35, Created)
DT 01-NOV-1997 (Rel. 35, Last sequence update)
DT 10-MAY-2005 (Rel. 47, Last annotation update)
DE Interferon beta precursor (IFN-beta).
GN Name=Ifnb1; Synonyms=Ifnb;
OS Rattus norvegicus (Rat);
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Euarchontoglires; Glires; Rodentia; Sciurognathi;
OC Muridae; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RC STRAIN=Wistar; TISSUE=Liver;
RX MEDLINE=97271387; PubMed=9126338; DOI=10.1006/bbrc.1997.6359;
RA Yokoyama S., Ohishi N., Shamoto M., Watanabe Y., Yagi K.;
RT "Isolation and expression of rat interferon beta gene and growth-
RT inhibitory effect of its expression on rat glioma cells.";
RL Biochem. Biophys. Res. Commun. 232:698-701(1997).

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CC -- FUNCTION: Has antiviral, antibacterial and anticancer activities.
CC -- SUBUNIT: Monomer (By similarity).
CC -- SUBCELLULAR LOCATION: Secreted.
CC -- PTM: This beta interferon does not have a disulfide bond.
CC -- SIMILARITY: Belongs to the alpha/beta interferon family.
CC
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CC removed.
CC
CC EMBL; D87919; BAA13502.1; -; Genomic_DNA.
CC PIR; JC5424; JC5424.
CC HSSP; P01574; 1AUI.
CC SMR; P70499; 22-184.
CC Ensembl; ENSRNOG00000006268; Rattus norvegicus.
CC RGD; 2865; Ifnb1.
CC InterPro; IPR000471; Interferon_abd.
CC PANTHER; PTHR11691; Interferon; 1.
CC Pfam; PF00143; Interferon; 1.
CC PRINTS; PR00266; INTERFERONAB.
CC ProDom; PD000550; Interferon abd; 1.
CC PROSITE; PS00252; INTERFERON_A_B_D; 1.
KW Antiviral defense; Cytokine; Glycoprotein; Signal.
FT SIGNAL 1 21
FT CHAIN 22 184 Interferon beta.
FT CARBOHYD 50 50 N-linked (GlcNAc . .) (Potential).
FT CARBOHYD 92 92 N-linked (GlcNAc . .) (Potential).
FT CARBOHYD 99 99 N-linked (GlcNAc . .) (Potential).
FT CARBOHYD 171 171 N-linked (GlcNAc . .) (Potential).
SQ SEQUENCE 184 AA; 22073 MW; 1D051D29F979ADDE CRC64;

Query Match 38.4%; Score 335.5; DB 1; Length 184;
Best Local Similarity 45.8%; Pred. No. 1.5e-19;
Matches 76; Conservative 24; Mismatches 63; Indels 3; Gaps 2;

QY 1 MSYNLGFQSRNSFCQKLLWOLNGRLEYCLKDRNFPDIPEIKQLQOFKEDAAALTY 60
Db 22 IDYKQLQOFRQSTIRTCOKLRQLNGRLN--LSVRTDFKIPMEVHPSPQMEKSYTAFAIQ 79

QY 61 EMLQNIFAIFQDSSSTGNETIVENLIANYVHOINHLKTVLEEKLEKEDFTRGKLMSSL 120
Db 80 EMLQNVLFVRNFSSTGNETIVRLDLHQQTFLKTVLEEK--QERLTWTSTTTL 138

QY 121 HLKRYVGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
Db 139 GLKSYVVRQYLYKMKYNSYAMVVRVRAEIRFNELIIRLTNRNFGN 184

RESULT 14
Q7YRX6 MACEU PRELIMINARY; PRT; 183 AA.
AC Q7YRX6;
DT 01-OCT-2003 (TRENBLrel. 25, Created)
DT 01-OCT-2003 (TRENBLrel. 25, Last sequence update)
DT 01-MAR-2004 (TRENBLrel. 26, Last annotation update)
DE Interferon beta 1.
GN Name=IFN;
OS Macropus eugenii (Tamar wallaby).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Metatheria; Diprotodontia; Macropodidae; Macropus.
OX NCBI_TaxID=9315;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX PubMed=15183033; DOI=10.1016/j.dci.2004.02.002;
RA Harrison G.A., McNicol K.A., Deane E.M.;
RT "Interferon alpha/beta genes from a marsupial, Macropus eugenii.";
RL Dev. Comp. Immunol. 28:927-940(2004).
CC -- SUBCELLULAR LOCATION: Secreted (By similarity).
DR EMBL; AY165862; AAO37658.1; -; Genomic_DNA.
DR HSSP; P01574; 1AUI.
DR GO; GO:0005576; C:extracellular region; IEA.

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DR GO: GO:0005126; F:hematopoietin/interferon-class (D200-domain. . .; IEA.
DR GO: GO:0006952; P:defense response; IEA.
DR InterPro: IPR000471; Interferon_abd.
DR Pfam: PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR ProDom; PD000550; Interferon_abd; 1.
DR SMART; SM00076; IFabd; 1.
DR PROSITE; PS00252; INTERFERON_A_B_D; 1.
KW Antiviral defense; Cytokine.
SQ SEQUENCE 183 AA; 21215 MW; E20859376477B5F9 CRC64;

DR GO: GO:0005126; F:hematopoietin/interferon-class (D200-domain. . .; IEA.
DR GO: GO:0006952; P:defense response; IEA.
DR InterPro: IPR000471; Interferon_abd.
DR Pfam: PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR ProDom; PD000550; Interferon_abd; 1.
DR SMART; SM00076; IFabd; 1.
DR PROSITE; PS00252; INTERFERON_A_B_D; 1.
KW Antiviral defense; Cytokine.
SQ SEQUENCE 183 AA; 21215 MW; E20859376477B5F9 CRC64;

Query Match 35.2%; Score 308; DB 2; Length 183;
Best Local Similarity 42.4%; Pred. No. 2.7e-17;
Matches 70; Conservative 31; Mismatches 58; Indels 6; Gaps 2;
QY 3 YNLLGFLQRSSNFQCKLLWLNGLRLE-YCLKDRMNFDPETIKQLQFQKEDAAITLYE 61
DB 24 YDSLRFHQRTNRRSLSLKEMIGETIHPCECLREGMDFKIPEIIVQPKQCKENATWVIHE 83
QY 62 MLQNIFAIFQDSSSTGWNETIVENLLANYHQLNKTVLEBKEKEDFTTRGKLMSSLLH 121
DB 84 MLQHIFFLSNKNASPGVNETITETIFLSGIYQOMVHLEAL-----KVNANGTAESILP 138
QY 122 LKRYYGRIHLHYLKAKYSHCAWTIVRVEILRNFYFINRLTGYLRN 166
DB 139 LANNYQIGIMNYLKSKEHCSCAKRKVQVEIRNFVFLIKWAELKN 183

RESULT 15
Q6XZW6_9MAMM
ID Q6XZW6_9MAMM PRELIMINARY; PRT; 187 AA.
AC Q6XZW6; 2004 (TREMBLrel. 27, Created)
DT 05-JUL-2004 (TREMBLrel. 27, Last sequence update)
DT 05-JUL-2004 (TREMBLrel. 27, Last annotation update)
DE Interferon-beta.
OS Tachyglossus aculeatus (Australian echidna).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Monotremata; Tachyglossidae; Tachyglossus.
OX NCBI_TaxID=9261;
RN [1]
RP NUCLEOTIDE SEQUENCE.
RX PubMed=15061761; DOI=10.1046/j.0818-9641.2004.01230.x;
RA Harrison G.A., McNicol K.A., Deane E.M.;
RT "Type I interferon genes from the egg-laying mammal, Tachyglossus
aculeatus (short-beaked echidna).";
RL Immunol. Cell Biol. 82:112-118(2004).
CC -!- SUBCELLULAR LOCATION: Secreted (By similarity).
DR EMBL; AY194920; AAP34279.1; -; Genomic_DNA.
DR HSP; P01574; IAU1.
DR GO: GO:0005576; C:extracellular region; IEA.
DR GO: GO:0005126; F:hematopoietin/interferon-class (D200-domain. . .; IEA.
DR GO: GO:0006952; P:defense response; IEA.
DR InterPro: IPR000471; Interferon_abd.
DR Pfam: PF00143; Interferon; 1.
DR PRINTS; PR00266; INTERFERONAB.
DR ProDom; PD000550; Interferon_abd; 1.
DR SMART; SM00076; IFabd; 1.
DR PROSITE; PS00252; INTERFERON_A_B_D; UNKNOWN_1.
KW Antiviral defense; Cytokine.
SQ SEQUENCE 187 AA; 22496 MW; 00A7FAC603EA58E5 CRC64;

Query Match 34.4%; Score 301; DB 2; Length 187;
Best Local Similarity 40.6%; Pred. No. 1e-16;
Matches 67; Conservative 37; Mismatches 59; Indels 2; Gaps 2;
QY 2 SYNLLGFLQRSSNFQCKLLWLNGLRLE-YCLKDRMNFDPETIKQLQFQKEDAAITLY 60
DB 23 SYLEYSHOWLNWNKSLHLNGLDQFPFLHCKESMNFKLPFAMLHPHQEQENATEAIIH 82
QY 61 EMLQNIFAIFQDSSSTGWNETIVENLLANYHQLNKTVLEBKEKEDFTTRGKLMSSL 120
DB 83 DLLOQIENIFSRNHSQTGDEAIVEKFLGHVQHWVWLELFLEEMCWENSTLRDI-SL 141

Search completed: December 21, 2005, 14:21:43
Job time : 229 secs

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GenCore version 5.1.6
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OM protein - protein search, using sw model

Run on: December 21, 2005, 13:55:56 ; Search time 187 Seconds
(without alignments)
390.037 Million cell updates/sec

Title: US-10-084-706-2

Perfect score: 874

Sequence: 1 MSYNLGFQRSSNFQCKL.....RVEILRNFFINRLTGILRN 166

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 2443163 seqs, 439378781 residues

Total number of hits satisfying chosen parameters: 2443163

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A Geneseq_21.*

- 1: geneseqp1980s.*
- 2: geneseqp1990s.*
- 3: geneseqp2000s.*
- 4: geneseqp2001s.*
- 5: geneseqp2002s.*
- 6: geneseqp2003as.*
- 7: geneseqp2003bs.*
- 8: geneseqp2004s.*
- 9: geneseqp2005s.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	% Match	Length	ID	Description
1	874	100.0	166	1 AAP30219	Aap30219 Sequence
2	874	100.0	166	1 AAP50262	Aap50262 Sequence
3	874	100.0	166	1 AAP50279	Aap50279 Protein s
4	874	100.0	166	1 AAP61071	Aap61071 Oxidation
5	874	100.0	166	1 AAP70296	Aap70296 Sequence
6	874	100.0	166	2 AAW81774	Aaw81774 Human nat
7	874	100.0	166	3 ADR83685	Adr83685 Human amn
8	874	100.0	166	4 AAB49356	Aab49356 Human INF
9	874	100.0	166	4 AAB49357	Aab49357 Human INF
10	874	100.0	166	4 AAE10346	Aae10346 Mature hu
11	874	100.0	166	4 AAU00038	Aau00038 Human int
12	874	100.0	166	4 AAE11979	Aae11979 Human wil
13	874	100.0	166	5 AAE16797	Aae16797 Human int
14	874	100.0	166	5 ABG97960	Abg97960 Human int
15	874	100.0	166	5 AAO26338	Aao26338 Wild-type
16	874	100.0	166	6 ABR40015	Abr40015 Human wil
17	874	100.0	166	6 ABU62226	Abu62226 Human int
18	874	100.0	166	7 ADF15241	Adf15241 Human alb
19	874	100.0	166	7 ADF15623	Adf15623 Human alb
20	874	100.0	166	7 ADF15165	Adf15165 Human alb
21	874	100.0	166	7 ADF15166	Adf15166 Human alb
22	874	100.0	166	7 ADF15229	Adf15229 Human alb
23	874	100.0	166	7 ADF16621	Adf16621 Human alb
24	874	100.0	166	7 ADF16622	Adf16622 Human alb

25	874	100.0	166	7 ADF17215	Adf17215 Unidentif
26	874	100.0	166	7 ADF70842	Adf70842 Human bet
27	874	100.0	166	7 ADG75820	Adg75820 Wild-type
28	874	100.0	166	7 ADH21850	Adh21850 Human mod
29	874	100.0	166	7 ADH21357	Adh21357 Human IFN
30	874	100.0	166	7 ADH21356	Adh21356 Human mod
31	874	100.0	166	7 ADH21356	Adh21356 Human IFN
32	874	100.0	166	7 ADH21368	Adh21368 Human IFN
33	874	100.0	166	7 ADH21370	Adh21370 Human mod
34	874	100.0	166	7 ADH21852	Adh21852 Human mod
35	874	100.0	166	8 ADH78593	Adh78593 Human fib
36	874	100.0	166	8 ADJ56127	Adj56127 Human int
37	874	100.0	166	8 ADJ50897	Adj50897 Human IFN
38	874	100.0	166	8 ADL71379	Adl71379 Human int
39	874	100.0	166	8 ADL90995	Adl90995 Human int
40	874	100.0	166	8 ADL97822	Adl97822 Human int
41	874	100.0	166	8 ADL88862	Adl88862 Human cyt
42	874	100.0	166	8 ADL88863	Adl88863 Human cyt
43	874	100.0	166	8 ADL89974	Adl89974 Human cyt
44	874	100.0	166	8 ADN10814	Adn10814 Human int
45	874	100.0	166	8 ADO43932	Ado43932 Amino aci

ALIGNMENTS

RESULT 1

AAP30219

ID AAP30219 standard; protein; 166 AA.

XX AC AAP30219;

XX AC AAP30219;

DT 25-MAR-2003 (revised)

DT 25-MAY-1992 (first entry)

XX XX

DE DE Sequence of interferon (HuIFN) -beta-1 encoded by plasmid pDM101/trp/beta

-1.

XX XX Hybrid interferon; antiviral; therapy; cancer; tumour.

XX OS Homo sapiens.

XX XX WO8302461-A.

PN XX

XX PD 21-JUL-1983.

XX PF 19-JAN-1982; 82US-00340782.

XX PR 19-JAN-1982; 82US-00340782.

PR 03-FEB-1983; 83US-00463574.

PR 15-JUL-1985; 85US-00755265.

XX XX (CETU) CETUS CORP.

PA (CETU) CETUS CORP.

XX XX Mark DF, Creasey AA;

PI WPI; 1983-723186/30.

XX DR N-PSDB; AAN30152.

XX XX Multi:class hybrid interferon poly;peptide(s) - with restricted antiviral

PT and cell growth regulatory activities.

XX XX Example; Fig 5; 61pp; English.

PS The inventors claim a multiclass hybrid interferon polypeptide and a DNA

XX unit having a nucleotide sequence which encodes it. Pref. the AA sequence

CC consists of alpha and beta interferons. Pref. IF1 is (i) the 1-73 AA seq.

CC of HuIFN-alpha-1 and IF2 is the 74-166 AA seq. of HuIFN-beta-1 (see

CC AAN30155, AAP30222); or (ii) the 1-41 AA seq. of HuIFN-alpha-61A (and IF2

CC is the 43-166 AA seq. of HuIFN-beta-1) (see AAN30160, AAP30227).

CC Alternately IF1 is the amino terminal end of a beta-IF and IF2 is the

CC carboxy terminal of an alpha-IF (esp. the 1-73 seq. of HuIFN-beta-1 and

CC the 74-167 seq. of HuIFN-alpha-1 resp.) (see AAN30156, AAP30223). In the
CC examples plasmids pGWS and pGM101/trp/beta-1 and p-alpha-61A were used
CC (see AAN30151, AAN30152, AAN30157). HinfI was used to digest the DNA
CC sequences in the region of significant handicaps (see AAN30153, AAN30154,
CC AAN30158, AAN30159), and the restriction fragments were ligated to form
CC hybrid DNA. (Updated on 25-MAR-2003 to correct PA field.)
XX

SQ Sequence 166 AA;

Query Match 100.0%; Score 874; DB 1; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
DB 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
QY 61 EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 61 EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
QY 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
DB 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166

RESULT 2

AAP50262
ID AAP50262 standard; protein; 166 AA.
XX
AC AAP50262;
XX
XX 03-OCT-2002 (revised)
DT 20-NOV-1991 (first entry)
XX
DE Sequence encoded by the sequence between the EcoRI site and the XhoII
DE site of p-beta-1-trp.
XX

KW Expression vector; trp promoter-operator; transformed bacteria.

XX Unidentified.
XX
XX US499188-A.
XX
XX 12-FEB-1985.
XX
XX 05-MAY-1982; 82US-00375098.
XX
XX 05-MAY-1982; 82US-00375098.
XX
XX (CETU) CETUS CORP.
PA (CETU) CETUS CORP.
XX
XX Konrad MW, Mark DF;
PI
XX
XX WPI; 1985-055962/09.
DR N-PSDB; AAN50289.
XX

PT Polypeptide, esp. interferon, prodn. by transformed bacteria - cultured
PT in presence of a repressor which is consumed during growth.

XX Example; Fig 5; 12pp; English.

XX The inventors claim a process for the prodn. of heterologous polypeptide
CC by transformed bacteria. The pref. promoter-operator is trp which
CC controls expression of structural genes encoding polypeptides of a
CC synthetic pathway forming tryptophan, esp. at a concn. of 5.3T mg/l (T=
CC predetermined turbidity value measured at 680nm, esp. 10-100). The
CC transformed bacteria are esp. E.coli contg. the plasmid p-beta-1-trp.
CC Example 1 concerns the construction of plasmid p-beta-1-trp for the
CC direct expression of IFN-beta under the control of trp promoter-operator.
CC (Updated on 03-OCT-2002 to add missing OS field.)
XX

SQ Sequence 166 AA;
Query Match 100.0%; Score 874; DB 1; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
DB 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
QY 61 EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 61 EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
QY 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166
DB 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166

RESULT 3

AAP50279
ID AAP50279 standard; protein; 166 AA.
XX
AC AAP50279;
XX
XX 25-MAR-2003 (revised)
DT 09-DEC-1991 (first entry)
XX
DE Protein sequence encoding synthetic interferon-beta gene.
DE Interferon-beta; virucide; antitumor; immunostimulant.
KW
XX
OS Synthetic.

XX EP131816-A.

XX 23-JAN-1985.

XX 28-JUN-1984; 84EP-00107498.

XX 01-JUL-1983; 83GB-00017880.

XX (SEAR) SEARLE & CO G D.

XX WPI; 1985-020165/04.

XX N-PSDB; AAN50306.

XX New modified beta-interferon(s) - useful as antiviral, anti-neoplastic
PT and immuno-modulatory agents.
XX
XX Disclosure; Fig 20; 96pp; English.

XX The sequence encodes a synthetic interferon-beta which has increased
CC biological activity compared to natural IFN-beta, and which is more
CC effective in the treatment of viral or neoplastic diseases, or
CC immunosuppressed or immunodeficient conditions. (Updated on 25-MAR-2003
CC to correct PA field.)
XX

SQ Sequence 166 AA;

Query Match 100.0%; Score 874; DB 1; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
DB 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
QY 61 EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 61 EMLQNIFAIFRODSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
QY 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTGYLRN 166

Db 121 HLKRYGRIHLHLKAKYSHCAWTIVRVEILRNFIINRLTGYLRN 166
|||||

RESULT 4
AAP61071
ID AAP61071 standard; protein; 166 AA.

XX AAP61071;
XX 03-OCT-2002 (revised)
DT 28-MAY-1991 (first entry)
XX
DE Oxidation resistant muten of Interferon-Beta.
XX
KW IL-2; IFN-Beta; colony stimulating factor; CSF-1; tPA; hGF.
XX
OS Homo sapiens.

XX Key Location/Qualifiers
FH Misc-difference 1..6
FT /note= "May be N-terminal truncated or absent"
FT Misc-difference 17
FT /note= "May be any conservative AA"
FT Misc-difference 36
FT /note= "May be any conservative AA"
FT Misc-difference 62
FT /note= "May be any conservative AA"
FT Misc-difference 117
FT /note= "May be any conservative AA"

XX AU8652451-A.
PN
XX 31-JUL-1986.
XX 17-JAN-1986; 86AU-00052451.
XX 18-JAN-1985; 85US-00692596.
PR 17-DEC-1985; 85US-00810656.
PR 05-AUG-1986; 86US-00893186.
PR 05-NOV-1986; 86AU-00064846.

XX (CETU) CETUS CORP.
XX
XX Kothe KE, Halenbeck RF, Innis MA;
XX WPI; 1986-239075/37.

XX Oxidn. resistant muten(s) - prepd. by replacing oxidn.-susceptible
PT methionine with conservative aminoacid.
XX
XX Claim 5; Page 50; 50pp; English.

XX Modified peptide has residues susceptible to chloramine T and peroxide
CC oxidation replaced with conservative AAs. Muten is thus resistant to
CC oxidation. Other proteins which may be similarly rendered resistant
CC include tissue plasminogen activator, colony stimulating factor and human
CC growth factor. (Updated on 03-OCT-2002 to add missing OS field.)
XX
XX Sequence 166 AA;

Query Match 100.0%; Score 874; DB 1; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 MSYNLGLFQSSNFQCKLLWOLNGRLEYCLKDRMNFDPPEIKQLQFQKEDAAITY 60
Db 1 MSYNLGLFQSSNFQCKLLWOLNGRLEYCLKDRMNFDPPEIKQLQFQKEDAAITY 60
|||||

Qy 61 EMLQNI FAIPRODSSSTGWNETTIVENLLANVYHQINHLKTVLEKLEKEDPTRGKLMSSL 120
Db 61 EMLQNI FAIPRODSSSTGWNETTIVENLLANVYHQINHLKTVLEKLEKEDPTRGKLMSSL 120
|||||

Qy 121 HLKRYGRIHLHLKAKYSHCAWTIVRVEILRNFIINRLTGYLRN 166
Db 121 HLKRYGRIHLHLKAKYSHCAWTIVRVEILRNFIINRLTGYLRN 166
|||||

RESULT 5
AAP70296
ID AAP70296 standard; protein; 166 AA.

XX AAP70296;
XX 07-JUN-1991 (first entry)
DT
XX Sequence of interferon-beta.
DE
XX Antiviral; antiproliferative agent.
KW
XX Homo sapiens.

XX EP237019-A.
PN
XX 16-SEP-1987.
XX 10-MAR-1987; 87EP-00103406.
PF
XX 14-MAR-1986; 86JP-00054650.
PR 26-DEC-1986; 86JP-00308693.
PR
XX (TORA) TORAY IND INC.
PA
XX Tanaka T, Kawano G, Sawada R;
PI WPI; 1987-258309/37.

XX Conjugates of interferon(s)-beta and-gamma - useful as antivirals and
PT anti-cell proliferatives with broader spectrum of activity and obtd.
PT economically by recombinant DNA procedures.

XX Claim 7; p35; 52pp; English.

XX The inventors claim an interferon conjugate wherein a C-terminal of the
CC region exhibiting biological activities of interferon-beta has been
CC linked to an N-terminal of the region exhibiting biological activities of
CC interferon-gamma. The antiviral activity of the conjugate was tested
CC using FL cells-sindbis virus system according to the CPE 50 inhibition
CC method. Antiviral activity ranged from 200 U/ml to 18500 U/ml

XX Sequence 166 AA;

Query Match 100.0%; Score 874; DB 1; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

Qy 1 MSYNLGLFQSSNFQCKLLWOLNGRLEYCLKDRMNFDPPEIKQLQFQKEDAAITY 60
Db 1 MSYNLGLFQSSNFQCKLLWOLNGRLEYCLKDRMNFDPPEIKQLQFQKEDAAITY 60
|||||

Qy 61 EMLQNI FAIPRODSSSTGWNETTIVENLLANVYHQINHLKTVLEKLEKEDPTRGKLMSSL 120
Db 61 EMLQNI FAIPRODSSSTGWNETTIVENLLANVYHQINHLKTVLEKLEKEDPTRGKLMSSL 120
|||||

Qy 121 HLKRYGRIHLHLKAKYSHCAWTIVRVEILRNFIINRLTGYLRN 166
Db 121 HLKRYGRIHLHLKAKYSHCAWTIVRVEILRNFIINRLTGYLRN 166
|||||

RESULT 6
AAW81774
ID AAW81774 standard; protein; 166 AA.

XX AAW81774;
AC
XX 29-JAN-1999 (first entry)
DT

XX Human native interferon-beta protein.
DE Interferon-Beta; variant; human; medicament; treatment; screening;
XX multiple sclerosis; measurement; water soluble.
KW Homo sapiens.
XX DE19717864-A1.
XX 29-OCT-1998.
XX 23-APR-1997; 97DE-01017864.
XX 23-APR-1997; 97DE-01017864.
XX (FRAU) FRAUNHOFER GES FOERDERUNG ANGEWANDTEN.
XX Schneider-Fresenius C, Otto B, Waschuetza G;
XX WPI; 1998-569784/49.
XX New mutated recombinant human interferon-beta protein contains hydroxylic
PT amino acid substitutions to improve water solubility - used e.g. in in
PT vitro screening assays, to measure interferon levels and to treat
PT multiple sclerosis.
XX Disclosure; Fig 1; 18pp; German.
XX This sequence represents a native human recombinant interferon-beta
CC protein which is mutated into an amino acid having at least one hydroxy
CC group substituted for at least one of Leu5, Phe8, Phe15, Leu47, Phe50,
CC Leu106, Phe111, Leu116, Leu120 and Phe156. Such mutants can be used in
CC medicaments e.g. for treating multiple sclerosis, for in vitro screening
CC assays and for measurement of interferon levels. The mutated protein is
CC more water-soluble than recombinant wild-type human interferon-beta
XX Sequence 166 AA;
QY Query Match 100.0%; Score 874; DB 2; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.le-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 60
Db 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 60
QY 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
Db 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
QY 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRLN 166
Db 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRLN 166
RESULT 7
ADR83685
ID ADR83685 standard; protein; 166 AA.
XX ADR83685;
XX 21-OCT-2004 (first entry)
XX Human amniotic membrane beta interferon (IFN) protein.
XX human; amniotic membrane; beta-interferon; IFN; IFN type 1; growth;
KW cellular differentiation; immunoregulation.
XX Homo sapiens.
XX BR9710827-A.
XX

PD 23-MAY-2000.
XX 16-DEC-1997; 97BR-00010827.
XX 16-DEC-1997; 97BR-00010827.
XX (UYMI-) UNIV FEDERAL MINAS GERAIS.
XX Peregrino Ferreira PC, Rolland Golgher R, Geessien Kroon E;
PI Bonjardim CA, Fiorini De Carvalho A, Rodrigues Dos Santos J;
XX WPI; 2000-423633/37.
XX Production of recombinant human amniotic membrane interferon comprises
PT cell cultivation for infection with Sendai virus, production of mRNA, RNA
PT fractionation, dissolution.
XX Disclosure; Fig 1; 16pp; Portuguese.
XX This invention relates to a novel method for producing human amniotic
CC membrane beta-interferon (IFN) protein (also identified as beta-IFN type
CC 1). Specifically, it refers to production of the recombinant protein
CC through genetic engineering techniques that can be used in medicine,
CC veterinary science and research. In particular, the human amniotic
CC membrane beta-IFN protein is important in the regulation of growth and
CC cellular differentiation and the immunoregulation of biological systems.
CC The present invention describes the process of cDNA amplification,
CC cloning and transforming competent bacteria then selecting those clones
CC that express the beta-IFN protein, which is then extracted and purified.
CC This polypeptide sequence is the human beta-IFN protein of the invention.
XX Sequence 166 AA;
QY Query Match 100.0%; Score 874; DB 3; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.le-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
QY 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 60
Db 1 MSYNLLGFLQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 60
QY 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
Db 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
QY 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRLN 166
Db 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRLN 166
RESULT 8
AAB49356
ID AAB49356 standard; protein; 166 AA.
XX AAB49356;
XX 07-MAR-2001 (first entry)
XX Human INF-beta A-chain.
XX Interferon-beta activity; multiple sclerosis; cancer; viral infection;
KW analogue.
XX Homo sapiens.
XX WO200068387-A2.
XX 16-NOV-2000.
XX 12-MAY-2000; 2000WO-US013216.
XX 12-MAY-1999; 99US-0133785P.
XX

PA (XENC-) XENCOR INC.
 XX Bentzien J;
 PI WPI; 2001-007398/01.
 XX Novel interferon-beta activity (IbA) proteins which have greater
 XX stability than interferon-beta (IFN-beta) useful for the treatment of IFN
 XX -beta related disorders such as multiple sclerosis.
 XX Disclosure; Fig 1A; 109pp; English.
 XX The present invention provides proteins which have interferon-beta (IFN-
 XX beta) activity. These analogues are produced so that they are less than
 XX 97% identical to human IFN-beta. They are useful in the treatment of
 XX multiple sclerosis, cancer, particularly osteosarcoma, basal cell
 XX carcinoma, cervical dysplasia, glioma, acute myeloid leukaemia, multiple
 XX myeloma, Hodgkin's disease, melanoma, and renal, liver and breast
 XX cancers, viral infections, including those caused by hepatitis viruses,
 XX herpes viruses and papilloma viruses, viral encephalitis, cytomegalovirus
 XX pneumonia and prophylaxis of rhinovirus, idiopathic pulmonary fibrosis
 XX and inflammatory diseases
 XX Sequence 166 AA;
 SQ
 Query Match 100.0%; Score 874; DB 4; Length 166;
 Best Local Similarity 100.0%; Pred. No. 2.1e-69;
 Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITTY 60
 DB 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITTY 60
 QY 61 EMLQNIFAIPQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
 DB 61 EMLQNIFAIPQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
 QY 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFYFINRLTGYLRN 166
 DB 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFYFINRLTGYLRN 166
 RESULT 9
 AAB49357
 ID AAB49357 standard; protein; 166 AA.
 AC AAB49357;
 XX 07-MAR-2001 (first entry)
 XX Human INF-beta B-chain.
 XX Interferon-beta activity; multiple sclerosis; cancer; viral infection;
 XX analogue.
 XX Homo sapiens.
 XX WO200068387-A2.
 XX 16-NOV-2000.
 XX 12-MAY-2000; 2000WO-US013216.
 XX 12-MAY-1999; 99US-0133785P.
 XX (XENC-) XENCOR INC.
 XX Bentzien J;
 XX WPI; 2001-007398/01.
 XX Novel interferon-beta activity (IbA) proteins which have greater
 XX stability than interferon-beta (IFN-beta) useful for the treatment of IFN

PT -beta related disorders such as multiple sclerosis.
 XX Example 1; Fig 1B; 109pp; English.
 XX The present invention provides proteins which have interferon-beta (IFN-
 XX beta) activity. These analogues are produced so that they are less than
 XX 97% identical to human IFN-beta. They are useful in the treatment of
 XX multiple sclerosis, cancer, particularly osteosarcoma, basal cell
 XX carcinoma, cervical dysplasia, glioma, acute myeloid leukaemia, multiple
 XX myeloma, Hodgkin's disease, melanoma, and renal, liver and breast
 XX cancers, viral infections, including those caused by hepatitis viruses,
 XX herpes viruses and papilloma viruses, viral encephalitis, cytomegalovirus
 XX pneumonia and prophylaxis of rhinovirus, idiopathic pulmonary fibrosis
 XX and inflammatory diseases
 XX Sequence 166 AA;
 SQ
 Query Match 100.0%; Score 874; DB 4; Length 166;
 Best Local Similarity 100.0%; Pred. No. 2.1e-69;
 Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITTY 60
 DB 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITTY 60
 QY 61 EMLQNIFAIPQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
 DB 61 EMLQNIFAIPQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
 QY 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFYFINRLTGYLRN 166
 DB 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFYFINRLTGYLRN 166
 RESULT 10
 AAE10346
 ID AAE10346 standard; protein; 166 AA.
 AC AAE10346;
 XX 10-DEC-2001 (first entry)
 XX Mature human beta-interferon.
 XX Human; beta-interferon; INF-beta; immune disease; demyelinating disease;
 XX sub-acute sclerosing panencephalomyelitis; SSPE; multiple sclerosis;
 XX metachromatic leukodystrophy; Guillain-Barre syndrome;
 XX autoimmune disease.
 XX Homo sapiens.
 XX EP1133997-A2.
 XX 19-SEP-2001.
 XX 20-FEB-2001; 2001EP-00103580.
 XX 23-FEB-2000; 2000EP-00440053.
 XX 07-NOV-2000; 2000US-0246089P.
 XX (TRGE) TRANSGENE SA.
 XX Braun S;
 XX WPI; 2001-572706/65.
 XX N-PSDB; AAD17506.
 XX Use of nucleic acid for the treatment of immune diseases such as multiple
 XX sclerosis.

XX PS
XX CC Claim 9; Page 15; 2lpp; English.
XX CC The invention relates to use of nucleic acids expressing human beta-interferon (INF-beta) for the treatment of immune diseases such as demyelinating disease (e.g. sub-acute sclerosing panencephalomyelitis (SSPE), metachromatic leukodystrophy, Guillain-Barre syndrome) and autoimmune disease (e.g. multiple sclerosis). The expression of the beta-interferon results in the improvement of the clinical status of the treated mammal, thus avoiding the use of recombinant polypeptide. The nucleic acid is therefore compatible with the quality of life of the patients. The present sequence is mature human beta-interferon
XX CC
XX SQ Sequence 166 AA;

Query Match 100.0%; Score 874; DB 4; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 MSYNLGLFQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
DB 1 MSYNLGLFQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
OY 61 EMLQNIFAIFRQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 61 EMLQNIFAIFRQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120

OY 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTYGLRN 166
DB 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTYGLRN 166

RESULT 11
AAU00038 AAU00038 standard; protein; 166 AA.
XX AC AAU00038;
XX DT 16-MAY-2001 (first entry)
XX DE Human interferon beta.
XX KW Human; interferon beta; antibody; multiple sclerosis; gene therapy;
XX KW viral infection; viral hepatitis; cancer; breast cancer; inflammation;
XX KW Crohn's disease; acute myeloid leukaemia; Hodgkin's disease;
XX KW ulcerative colitis; immunomodulation.
XX OS Homo sapiens.
XX PN WO200115736-A2.
XX PD 08-MAR-2001.
XX PF 25-AUG-2000; 2000WO-DK000471.
XX PR 27-AUG-1999; 99DK-00001197.
XX PR 21-OCT-1999; 99US-0160782P.
XX PR 26-NOV-1999; 99DK-00001691.
XX PR 07-FEB-2000; 2000DK-00000194.
XX PR 17-MAR-2000; 2000DK-00000363.
XX PR 14-APR-2000; 2000DK-00000642.
XX PA (MAXY-) MAXYGEN AFS.
XX PI Pedersen AH, Schambye HT, Andersen KV, Bornaes C, Rasmussen PB;
XX WPI; 2001-218488/22.
XX DR N-PSDB; AAS00067.
XX A conjugate exhibiting interferon beta activity useful for treating
PT multiple sclerosis comprises a non-polypeptide group covalently attached
PT to an interferon beta polypeptide.
XX

PS Example 1; Page 99-100; 108pp; English.
XX CC The sequence is Human interferon beta. Conjugates of the invention exhibiting interferon beta activity comprise at least one first non-polypeptide group covalently attached to an interferon beta polypeptide, the amino acid sequence of which differs from wild-type human interferon beta in at least one introduced and at least one removed amino acid residue comprising an attachment group for the first non-polypeptide group. The invention also concerns reducing the immunogenicity and/or increasing functional in vivo half-life and/or serum half-life of an interferon beta polypeptide comprising introducing an amino acid residue constituting an attachment group for a first non-polypeptide group into a position exposed at the surface of the protein that does not contain such a group and removing an amino acid residue constituting an attachment group for a first non-polypeptide group and subjecting the modified peptide to conjugation with the non-polypeptide group. The conjugate and a cell culture expressing the mutated polypeptides are useful in the treatment of disease, especially multiple sclerosis, and for treating mammals having circulating antibodies against interferon beta 1a or 1b. DNA encoding the mutated proteins may be used for gene therapy. The DNA and proteins can also be used to treat viral infections (e.g. viral hepatitis), cancer (e.g. breast cancer), inflammation, Crohn's disease, acute myeloid leukaemia, Hodgkin's disease and ulcerative colitis and for immunomodulation
XX CC
XX SQ Sequence 166 AA;

Query Match 100.0%; Score 874; DB 4; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

OY 1 MSYNLGLFQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
DB 1 MSYNLGLFQSSNFQCKLLWQLNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAALTY 60
OY 61 EMLQNIFAIFRQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 61 EMLQNIFAIFRQDSSSTGWNTEIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120

OY 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTYGLRN 166
DB 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFYNRLTYGLRN 166

RESULT 12
AAE11979 AAE11979 standard; protein; 166 AA.
XX AC AAE11979;
XX DT 18-DEC-2001 (first entry)
XX DE Human wild-type interferon (IFN) beta.
XX KW Human; interferon-gamma; IFNG; interferon-beta; interferon alpha; FSH;
XX KW follicle stimulating hormone; granulocyte colony stimulating factor;
XX KW G-CSF; interleukin 10; IL-10; medicament; pulmonary administration;
XX KW circulatory administration.
XX OS Homo sapiens.
XX PN WO200168141-A2.
XX PD 20-SEP-2001.
XX PF 16-MAR-2001; 2001WO-DK000182.
XX PR 17-MAR-2000; 2000DK-00000447.
XX PR 20-MAR-2000; 2000US-019844P.
XX PR 25-AUG-2000; 2000WO-DK000471.
XX PR 13-NOV-2000; 2000WO-DK000631.
XX PA (MAXY-) MAXYGEN AFS.

```
XX Hansen CK;
PI
XX
XX WPI; 2001-616274/71.
DR
XX Dispersions of particles for administration to the lung and circulatory
XX system by inhalation, e.g. from a nebulizer.
PT
XX
XX Claim 22; Page 136; 139pp; English.
PS
XX
XX The present invention relates to novel dispersions of a conjugate
XX comprising at least one non-polypeptide moiety covalently attached to a
XX polypeptide variant, wherein the amino acid sequence of the polypeptide
XX variant differs from that of the corresponding wild-type human
XX polypeptide in that at least 1 residue comprising an attachment group for
XX the non-polypeptide group has been introduced and/or removed. The wild-
XX type human polypeptide is selected from the group consisting of
XX interferon-gamma (IFNG), interferon-beta, interferon alpha, follicle
XX stimulating hormone (FSH), interleukin 10 (IL-10) and granulocyte colony
XX stimulating factor (G-CSF). The dispersion is used for the preparation of
XX a medicament for pulmonary and/or circulatory administration. The present
XX sequence is human wild type interferon (IFN) beta
SQ
XX
XX Query Match 100.0%; Score 874; DB 4; Length 166;
XX Best Local Similarity 100.0%; Pred. No. 2.1e-69;
XX Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITY 60
XX Db 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITY 60
XX
XX QY 61 EMLQNIFAIPRODSSSTGWNETHVLLANVYHQINHLKTVLBEKEKEDFTRGKLMSSL 120
XX Db 61 EMLQNIFAIPRODSSSTGWNETHVLLANVYHQINHLKTVLBEKEKEDFTRGKLMSSL 120
XX
XX QY 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
XX Db 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
XX
XX RESULT 13
XX AAE16797
XX ID AAE16797 standard; protein; 166 AA.
XX
XX AAE16797;
XX
XX 09-APR-2002 (first entry)
XX
XX Human interferon (IFN)-beta protein.
XX
XX Human; interferon-beta; IFN-epsilon; cytostatic; immunosuppressive;
XX virucide; gene therapy; autoimmune disease; lymphoproliferative disorder;
XX cancer; tumour; B-cell lymphoma; lymphatic leukaemia; immune response.
XX
XX Homo sapiens.
XX
XX US6329175-B1.
XX
XX 11-DEC-2001.
XX
XX 16-SEP-1999; 99US-00397992.
XX
XX 18-SEP-1998; 98US-0101012P.
XX
XX 05-FEB-1999; 99US-0118578P.
XX
XX 08-JUL-1999; 99US-0142766P.
XX
XX (ZYMO) ZYMOGENETICS INC.
XX
XX Conklin DC, Grant FJ, Rixon MW, Kindsvogel W;
XX WPI; 2002-121134/16.
XX
XX
XX Nucleic acid molecules encoding interferon epsilon polypeptides useful
XX for treating certain autoimmune diseases, cancers and for the enhancement
XX of immune response against infectious agents.
XX
XX Disclosure; Fig 1; 59pp; English.
XX
XX The invention relates to an isolated nucleic acid molecule encoding a
XX murine interferon epsilon (IFN-epsilon, zifne) polypeptide. IFN-epsilon
XX DNA is useful for producing IFN-epsilon polypeptides which is useful for
XX treating autoimmune diseases, cancers, tumours and lymphoproliferative
XX disorders including B-cell lymphoma, chronic lymphatic leukaemia and
XX acute lymphatic leukaemia. IFN-epsilon protein is useful for the
XX enhancement of immune response against infectious agents, e.g. virus. IFN
XX -epsilon DNA is useful in gene therapy. The present sequence is human
XX interferon (IFN)-beta protein
XX
XX Sequence 166 AA;
XX
XX Query Match 100.0%; Score 874; DB 5; Length 166;
XX Best Local Similarity 100.0%; Pred. No. 2.1e-69;
XX Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
XX
XX QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITY 60
XX Db 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRNFDIPEIKQLQFQKEDAAITY 60
XX
XX QY 61 EMLQNIFAIPRODSSSTGWNETHVLLANVYHQINHLKTVLBEKEKEDFTRGKLMSSL 120
XX Db 61 EMLQNIFAIPRODSSSTGWNETHVLLANVYHQINHLKTVLBEKEKEDFTRGKLMSSL 120
XX
XX QY 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
XX Db 121 HLKRYGRIILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
XX
XX RESULT 14
XX ABG97960
XX ID ABG97960 standard; protein; 166 AA.
XX
XX AC ABG97960;
XX
XX 07-JAN-2003 (first entry)
XX
XX Human interferon beta (INFbeta) wild-type protein.
XX
XX Human; interferon beta; INFbeta; non-immunogenic; T-cell epitope;
XX major histocompatibility complex; MHC class II ligand; MHC allotype;
XX reduced immunogenicity.
XX
XX Homo sapiens.
XX
XX WO200274783-A2.
XX
XX 26-SEP-2002.
XX
XX 15-MAR-2002; 2002WO-BP002925.
XX
XX 15-MAR-2001; 2001EP-00106539.
XX
XX (MERE) MERCK PATENT GMBH.
XX
XX Carr FJ, Carter G, Jones T, Watkins J, Baker M;
XX WPI; 2002-750532/81.
XX
XX New modified molecule with the biological activity of human interferon
XX (INF) beta that is non-immunogenic or less immunogenic than any non-
XX modified molecule, useful for vaccination to reduce immunogenicity to INF
XX beta in vivo.
XX
XX Disclosure; Page 5; 60pp; English.
XX
```

CC The present invention relates to modified human interferon beta (INFBeta)
CC polypeptides that are substantially non-immunogenic or less immunogenic
CC than any non-modified molecule having the same biological activity when
CC used in vivo. The modified molecule is obtained by altering or
CC substituting one or more amino acids in the wild-type sequence for human
CC INFBeta. The modifications involve (a) removing one or more T-cell
CC epitopes derived from the wild-type molecule and being major
CC histocompatibility complex (MHC) class II ligands or peptide sequences
CC that show the ability to stimulate or bind T-cells via presentation on
CC MHC class II, and/or (b) reduction in numbers of MHC allotypes able to
CC bind peptides derived from the molecule. The modified polypeptides are
CC useful in manufacturing INFBeta with reduced immunogenicity than any non-
CC modified molecule with the same or acceptably reduced degree of
CC biological activity when used in vivo. The polypeptides are also useful
CC for the vaccination of patients to reduce immunogenicity to INFBeta in
CC vivo. The present sequence represents the wild-type human INFBeta protein
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 874; DB 5; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 MSYNLLGFLQSSNFQCCQLLWQLNGRLEYCLKDRMNFDPPEIKQLQOFQKEDAAALTYI 60
Db 1 MSYNLLGFLQSSNFQCCQLLWQLNGRLEYCLKDRMNFDPPEIKQLQOFQKEDAAALTYI 60
Qy 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
Db 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
Qy 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
Db 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166

RESULT 15
AAO26338
ID AAO26338 standard; protein; 166 AA.

XX AAO26338;
XX
XX
XX 16-JAN-2003 (first entry)
XX
DE wild-type human interferon beta protein.
XX
KW Neuroprotective; cytostatic; virucide; glycosylated variant; IFNB;
KW interferon beta; glycosylation site; multiple sclerosis; cancer; breast;
KW bladder cancer; herpes zoster; viral hepatitis; gene therapy;
KW wild-type human interferon beta protein.

OS Homo sapiens.
XX
XX WO200274806-A2.
XX
XX 26-SEP-2002.
XX
XX 26-FEB-2002; 2002WO-DK000128.
XX
XX 27-FEB-2001; 2001DK-00000323.
PR 01-MAR-2001; 2001DK-00000333.
PR 29-JUN-2001; 2001DK-00001040.
PR 30-AUG-2001; 2001DK-00001277.
PR 21-DEC-2001; 2001DK-00001954.
PR 19-FEB-2002; 2002DK-00000257.
XX
XX (MAXY-) MAXYGEN AFS.

XX
XX Rasmussen PB, Drusturup J, Rasmussen G, Pedersen AH;
XX WPI; 2002-750536/81.
XX N-PSDB; AAL53464.
XX

PT New glycosylated variant of interferon-beta polypeptide, useful for
PT treating multiple sclerosis, cancer or viral infections, comprises an
PT increased glycosylation activity compared to the parent polypeptide.
XX
XX Claim 7; Page 100; 100pp; English.
CC The invention relates to a glycosylated variant of a parent interferon
CC beta (IFNB) polypeptide comprising at least one in vivo glycosylation
CC site, where an amino acid residue of the parent polypeptide located close
CC to the glycosylation site has been modified to obtain the variant
CC polypeptide having an increased glycosylation as compared to the
CC glycosylation of the parent polypeptide. The variant, conjugate or
CC composition, is useful in the treatment of, or in the manufacture of a
CC treatment of diseases, in particular multiple sclerosis. The variant may
CC also be used in treating cancer (e.g. breast or bladder cancer) or viral
CC infections (e.g. herpes zoster, viral hepatitis). The polynucleotide of
CC the invention can be used in gene therapy. This sequence represents the
CC wild-type human interferon beta protein of the invention
XX
SQ Sequence 166 AA;

Query Match 100.0%; Score 874; DB 5; Length 166;
Best Local Similarity 100.0%; Pred. No. 2.1e-69;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
Qy 1 MSYNLLGFLQSSNFQCCQLLWQLNGRLEYCLKDRMNFDPPEIKQLQOFQKEDAAALTYI 60
Db 1 MSYNLLGFLQSSNFQCCQLLWQLNGRLEYCLKDRMNFDPPEIKQLQOFQKEDAAALTYI 60
Qy 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
Db 61 EMLQNIFAIFRDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
Qy 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
Db 121 HLKRYGRILHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166

Search completed: December 21, 2005, 14:17:06
Job time : 190 secs

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OM protein - protein search, using sw model

Run on: December 21, 2005, 14:09:41 ; Search time 38 Seconds
(without alignments)
420.315 Million cell updates/sec

Title: US-10-084-706-2
Perfect score: 874
Sequence: 1 MSYNLLGFLQRSSNFQCKL.....RVEILLRNFYINRLTGLRN 166

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 283416 seqs, 96216763 residues 283416
Total number of hits satisfying chosen parameters:

Minimum DB seq length: 0
Maximum DB seq length: 2000000000
Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : PIR 80.*
1: Pirl.*
2: Pirl.*
3: Pirl.*
4: Pirl.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	874	100.0	187	1 IVHUB1	interferon beta-1
2	492.5	56.4	186	1 IVB052	interferon beta-2
3	487.5	55.8	186	1 IVH051	interferon beta-1
4	458.5	52.5	186	1 IVB0B3	interferon beta-3
5	440.5	50.4	186	1 IVB0B1	interferon beta-1
6	342.5	39.2	182	1 IVMSB	interferon beta pr
7	335.5	38.4	184	2 JC5424	interferon beta pr
8	289	33.1	195	1 IVH022	interferon alpha-1
9	268	30.7	195	1 IVH021	interferon alpha-1
10	264	30.2	184	1 IVH0A1	interferon alpha-1
11	264	30.2	184	1 IVH0A3	interferon alpha-1
12	264	30.2	184	1 IVH0A4	interferon alpha-1
13	260.5	29.8	189	1 IVH0A6	interferon alpha-1
14	260.5	29.8	189	2 I37584	IFN-alpha-N-protein
15	260	29.7	184	1 IVH0A2	interferon alpha-1
16	257.5	29.5	195	1 IVB0I1	interferon alpha-1
17	255.5	29.2	172	2 A61578	trophoblast protei
18	255.5	29.2	195	2 A61578	trophoblast protei
19	254.5	29.1	165	2 I78570	alpha 2 interferon
20	254	29.1	195	1 IVH0I1	interferon omega-1
21	253.5	29.0	188	1 IVH0A2	interferon alpha-2
22	253.5	29.0	189	1 IVH0A4	interferon alpha-1
23	251.5	28.8	167	2 F25843	interferon alpha-J
24	251.5	28.8	189	1 IVH0A0	interferon alpha-7
25	251.5	28.8	189	1 IVH0A7	interferon alpha-5
26	251.5	28.8	195	2 I53102	interferon-alpha-J
27	250.5	28.7	195	2 JS0204	trophoblast interf
28	249.5	28.5	189	2 I52347	interferon alpha-M
29	249.5	28.5	195	2 I47068	trophoblast protei

ALIGNMENTS

RESULT 1

IVHUB1

Interferon beta-1 precursor [validated] - human

C;Species: Homo sapiens (man)

C;Date: 18-Aug-1982 #sequence revision 18-Aug-1982 #text change 09-Jul-2004

C;Accession: A93721; A93887; A91468; A93225; A93706; A93700; A93265; S04479; I56315; A01f

R;Lawn, R.M.; Adelman, J.; Franke, A.E.; Houck, C.M.; Gross, M.; Najarian, R.; Goeddel, I

Nucleic Acids Res. 9, 1045-1052, 1981

A;Title: Human fibroblast interferon gene lacks introns.

A;Reference number: A93721; MUID:81198952; PMID:6164984

A;Accession: A93721

A;Molecule type: DNA

A;Residues: 1-187 <LAW>

A;Cross-references: UNIPROT:P01574; UNIPARC:UPI000004775D; GB:V00535; NID:G32639; PIDN:G3

R;Ohno, S.; Taniguchi, T.

Proc. Natl. Acad. Sci. U.S.A. 78, 5305-5309, 1981

A;Title: Structure of a chromosomal gene for human interferon beta.

A;Reference number: A93887

A;Accession: A93887

A;Molecule type: DNA

A;Residues: 1-187 <OHN>

A;Cross-references: UNIPARC:UPI000004775D

R;Taniguchi, T.; Ohno, S.; Fujii-Kuriyama, Y.; Muramatsu, M.

Gene 10, 11-15, 1980

A;Title: The nucleotide sequence of human fibroblast interferon cDNA.

A;Reference number: A91468; MUID:81005095; PMID:6157601

A;Accession: A91468

A;Molecule type: mRNA

A;Residues: 1-187 <TAN>

A;Cross-references: UNIPARC:UPI000004775D; GB:V00546; NID:G32735; PIDN:CAA23807.1; PID:G-

R;Derynck, R.; Content, J.; Declercq, E.; Volckaert, G.; Tavernier, J.; Devos, R.; Fiers, R.

Nature 285, 542-547, 1980

A;Title: Isolation and structure of a human fibroblast interferon gene.

A;Reference number: A93225; MUID:80254542; PMID:6157094

A;Accession: A93225

A;Molecule type: DNA

A;Residues: 1-187 <DER>

A;Cross-references: UNIPARC:UPI000004775D; GB:V00546; NID:G32735; PIDN:CAA23807.1; PID:G-

R;Houghton, M.; Eaton, M.A.W.; Stewart, A.G.; Smith, J.C.; Doel, S.M.; Cartlin, G.H.; Lev

Nucleic Acids Res. 8, 2885-2894, 1980

A;Title: The complete amino acid sequence of human fibroblast interferon as deduced using

A;Reference number: A93706; MUID:81053720; PMID:6159580

A;Accession: A93706

A;Molecule type: mRNA

A;Residues: 1-187 <HOJ>

A;Cross-references: UNIPARC:UPI000004775D; GB:V00546; NID:G32735; PIDN:CAA23807.1; PID:G-

R;Houghton, M.; Stewart, A.G.; Doel, S.M.; Emtage, J.S.; Eaton, M.A.W.; Smith, J.C.; Pat

Nucleic Acids Res. 8, 1913-1931, 1980

A;Title: The amino-terminal sequence of human fibroblast interferon as deduced from reve

A;Reference number: A93700; MUID:81053854; PMID:6159597

A;Accession: A93700

A;Molecule type: mRNA

A;Residues: 1-68 <HO2>
A;Cross-references: UNIPARC:UPI0000173654
R;Wetzel, R.
Nature 289, 606-607, 1981
A;Title: Assignment of the disulphide bonds of leukocyte interferon.
A;Reference number: A93244; MUID:81123083; PMID:6162107
A;Content: annotation; disulfide bond
R;Shepard, H.M.; Leung, D.; Stebbing, N.; Goeddel, D.V.
Nature 294, 563-565, 1981
A;Title: A single amino acid change in IFN-beta-1 abolishes its antiviral activity.
A;Reference number: A93269; MUID:82080683; PMID:6171735
A;Accession: A93269
A;Molecule type: mRNA
A;Residues: 71-161, 'Y', 163-187 <SHE>
A;Cross-references: UNIPARC:UPI0000173655
A;Experimental source: variant, clone pF526
A;Note: the loss of Cys-162 (and of the ability to form the essential disulfide bond) in R;Utsumi, J.; Mizuno, Y.; Hosoi, K.; Okano, K.; Sawada, R.; Kajitani, M.; Sakai, I.; Nari
Eur. J. Biochem. 181, 545-553, 1989
A;Title: Characterization of four different mammalian-cell-derived recombinant human int
A;Reference number: S04479; MUID:89276336; PMID:2731537
A;Accession: S04479
A;Status: preliminary
A;Molecule type: protein
A;Residues: 22-187 <UTS>
A;Cross-references: UNIPARC:UPI000002BE76
R;May, L.T.; Sehgal, P.B.
J. Interferon Res. 5, 521-526, 1985
A;Title: On the relationship between human interferon alpha-1 and beta-1 genes.
A;Reference number: I56315; MUID:86035565; PMID:2414376
A;Accession: I56315
A;Status: preliminary; translated from GB/EMBL/DDBJ
A;Molecule type: mRNA
A;Residues: 1-187 <RES>
A;Cross-references: UNIPARC:UPI000004775D; GB:M28622; NID:g184624; PIDN:AAA36040.1; PID:
C;Genetics:
A;Gene: GDB:IFNB1; IFNB
A;Cross-references: GDB:120522; OMIM:147640
A;Map position: 9p21-9p21
C;Superfamily: interferon alpha
C;Keywords: antiviral
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-187/Product: interferon beta-1 #status experimental <MAT>
F;52-162/Disulfide bonds: #status predicted

Query Match 100.0%; Score 874; DB 1; Length 187;
Best Local Similarity 100.0%; Pred. No. 5.6e-64;
Matches 166; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 60
DB 22 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 81

QY 61 EMLQNIFFAIQRODSSSTGWNTEIVNLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 82 EMLQNIFFAIQRODSSSTGWNTEIVNLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSL 141

QY 121 HLKRYGRIHLHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
DB 142 HLKRYGRIHLHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 187

RESULT 2
IVBOB2
interferon beta-2 precursor - bovine
C;Species: Bos primigenius taurus (cattle)
C;Date: 15-Nov-1984 #sequence_revision 15-Nov-1984 #text_change 09-Jul-2004
C;Accession: A01840
R;Leung, D.W.; Capon, D.J.; Goeddel, D.V.
Bio/Technology 2, 458-464, 1984
A;Title: The structure and bacterial expression of three distinct bovine interferon-beta
A;Reference number: A90097
A;Accession: A01840

A;Molecule type: DNA
A;Residues: 1-186 <LEU>
A;Cross-references: UNIPROT:P01576; UNIPARC:UPI000012D64C
C;Superfamily: interferon alpha
C;Keywords: glycoprotein
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-186/Product: interferon beta-2 #status predicted <MAT>
F;52-161/Disulfide bonds: #status predicted
F;131,173/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 56.4%; Score 492.5; DB 1; Length 186;
Best Local Similarity 57.9%; Pred. No. 5.2e-33;
Matches 95; Conservative 30; Mismatches 38; Indels 1; Gaps 1;

QY 2 SYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 61
DB 23 SYSLRFFQRRSLACQKLLRQLPSTPQHCLEARMDQPMEMQAQFOKEDAAITY 82

QY 62 MLQNIFFAIQRODSSSTGWNTEIVNLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSL 121
DB 83 MLQNIFFAIQRODSSSTGWNTEIVNLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSL 141

QY 122 LKRYGRIHLHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLR 165
DB 142 LKRYGRIHLHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLR 185

RESULT 3
IVBOB1
interferon beta-1 precursor - horse
N;Alternate names: EqIFN-beta-1; type I interferon
C;Species: Equus caballus (domestic horse)
C;Date: 28-Dec-1987 #sequence_revision 28-Dec-1987 #text_change 09-Jul-2004
C;Accession: G24912
R;Himmler, A.; Hauptmann, R.; Adolf, G.R.; Swetly, P.
DNA 5, 345-356, 1986
A;Title: Molecular cloning and expression in Escherichia coli of equine type I interferon
A;Reference number: A90956; MUID:87053170; PMID:3022999
A;Accession: G24912
A;Molecule type: mRNA
A;Residues: 1-186 <HIM>
A;Cross-references: UNIPROT:P05012; UNIPARC:UPI000002C9FB; GB:M14546; NID:g164228; PIDN:
C;Superfamily: interferon alpha
C;Keywords: antiviral; glycoprotein
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-186/Product: interferon beta-1 #status predicted <MAT>
F;101,136/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 55.8%; Score 487.5; DB 1; Length 186;
Best Local Similarity 59.0%; Pred. No. 1.3e-32;
Matches 98; Conservative 27; Mismatches 40; Indels 1; Gaps 1;

QY 1 MSYNLLGFLQSSNFQCKLLWQNGRLEYCLKDRMNFDPPEIKOLOQFOKEDAAITY 60
DB 22 VNYDLRLQLRSSNSACLMLRLQLNGAPQPCDPTMNFQVPEIQAQFOKEDAAITY 81

QY 61 EMLQNIFFAIQRODSSSTGWNTEIVNLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSL 120
DB 82 EMLQNIFFAIQRODSSSTGWNTEIVNLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSL 140

QY 121 HLKRYGRIHLHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 166
DB 141 RLKRYGRIHLHYLKAKEYSHCAWTIVRVEILRNFFINRLTGYLRN 186

RESULT 4
IVBOB3
interferon beta-3 precursor - bovine
C;Species: Bos primigenius taurus (cattle)
C;Date: 15-Nov-1984 #sequence_revision 15-Nov-1984 #text_change 09-Jul-2004
C;Accession: A01841
R;Leung, D.W.; Capon, D.J.; Goeddel, D.V.
Bio/Technology 2, 458-464, 1984

A>Title: The structure and bacterial expression of three distinct bovine interferon-beta
A:Reference number: A90097
A:Accession: A01841
A:Molecule type: DNA
A:Residues: 1-186 <LEU>
A:Cross-references: UNIPROT:P01577; UNIPARC:UPI000012D64E
C:Superfamily: interferon alpha
C:Keywords: glycoprotein
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-186/Product: interferon beta-3 #status predicted <MAT>
F;52-161/Disulfide bonds: #status predicted
F;131,173/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 52.5%; Score 458.5; DB 1; Length 186;
Best Local Similarity 53.3%; Pred. No. 36-30; Indels 1; Gaps 1;
Matches 88; Conservative 35; Mismatches 41;

Qy 2 SYNLGLFLQSSNFQCKLLQWLNGLRLEYCLKDRMNFDPPEIKQLQFOQKEDAAITYE 61
Db 23 SYSLRFQQRSAEVCQKLLGQLHSTPQHCLEAKMDFQVPEEMNQAFQKEDAILVIYE 82
Qy 62 MLQNIFAIFRODSSSTGWNTEIVNLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLH 121
Db 83 MLQNIENILTRDPSSTGWSSTETIEDLLVELYQGNRLQPIQKEIMQEQNFTWGD-TTVLH 141
Qy 122 LKRYGGRILHYLKAKYSHCAWTIVRVEILNRYFINRLTGYLRN 166
Db 142 LKRYFNLMQYLESKEYDRCAWTIVVQVQLTNVSVFLMRLTGYVRD 186

RESULT 5
IVBOB1
interferon beta-1 precursor - bovine
C:Species: Bos primigenius taurus (cattle)
C:Date: 15-Nov-1984 #sequence_revision 15-Nov-1984 #text_change 09-Jul-2004
A:Reference number: A01842
A:Accession: A01842
R:Leung, D.W.; Capon, D.J.; Goeddel, D.V.
Bio/Technology 2, 458-464, 1984
A>Title: The structure and bacterial expression of three distinct bovine interferon-beta
A:Reference number: A90097
A:Accession: A01842
A:Molecule type: DNA
A:Residues: 1-186 <LEU>
A:Cross-references: UNIPROT:P01578; UNIPARC:UPI000012D64B
C:Superfamily: interferon alpha
C:Keywords: glycoprotein
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-186/Product: interferon beta-1 #status predicted <MAT>
F;52-161/Disulfide bonds: #status predicted
F;131,173/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 50.4%; Score 440.5; DB 1; Length 186;
Best Local Similarity 51.5%; Pred. No. 8.6e-29;
Matches 85; Conservative 36; Mismatches 43; Indels 1; Gaps 1;

Qy 2 SYNLGLFLQSSNFQCKLLQWLNGLRLEYCLKDRMNFDPPEIKQLQFOQKEDAAITYE 61
Db 23 SYSLRFQQRSLKQCKQLGQLPSTQHCLEARMDQMPPEEMKQEQFOKEDAILWYIE 82
Qy 62 MLQNIFAIFRODSSSTGWNTEIVNLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSLH 121
Db 83 VLQHFGLILTRDPSSTGWSSTETIEDLLKELYQGNRLQPIQKEIMQKONSTTETIVP-H 141
Qy 122 LKRYGGRILHYLKAKYSHCAWTIVRVEILNRYFINRLTGYLRN 166
Db 142 LKRYFNLMQYLESKEYDRCAWTIVVQVQLTNVSVFLMRLTGYVRD 186

RESULT 6
IVMSB
interferon beta precursor - mouse
C:Species: Mus musculus (house mouse)
C:Date: 03-Aug-1984 #sequence_revision 03-Aug-1984 #text_change 09-Jul-2004

C:Accession: S02020; S04201; A01839
R:Vojdani, G.; Coulombel, C.; Dohly, J.
J. Mol. Biol. 204, 221-231, 1988
A>Title: Structure and characterization of a murine chromosomal fragment containing the i
A:Reference number: S02020; MUID:89125582; PMID:3221389
A:Accession: S02020
A:Molecule type: DNA
A:Residues: 1-182 <VOD>
A:Cross-references: UNIPROT:P01575; UNIPARC:UPI0000022EE3; EMBL:X14029; NID:G51550; PIDN:
R:Kuga, T.; Fujita, T.; Taniguchi, T.
Nucleic Acids Res. 17, 3291, 1989
A>Title: Nucleotide sequence of the mouse interferon-beta gene.
A:Reference number: S04201; MUID:89263735; PMID:2726460
A:Accession: S04201
A>Status: translation not shown
A:Molecule type: DNA
A:Residues: 1-182 <KUG>
A:Cross-references: UNIPARC:UPI0000022EE3; EMBL:X14455; NID:G51538; PIDN:CAA32625.1; PID:
J.Higashi, Y.; Sokawa, Y.; Watanabe, Y.; Kawade, Y.; Ohno, S.; Takaoka, C.; Taniguchi, T.
J. Biol. Chem. 258, 9522-9529, 1983
A>Title: Structure and expression of a cloned cDNA for mouse interferon-beta.
A:Reference number: A01839; MUID:83265757; PMID:6688252
A:Accession: A01839
A:Molecule type: mRNA
A:Residues: 1-182 <HIG>
A:Cross-references: UNIPARC:UPI0000022EE3; GB:K00020; NID:G194113; PIDN:AAA37891.1; PID:
C:Genetics:
A:Map position: 4
C:Superfamily: interferon alpha
C:Keywords: glycoprotein
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-182/Product: interferon beta #status predicted <MAT>
F;50,90,97/Binding site: carbohydrate (Asn) (covalent) #status predicted

Query Match 39.2%; Score 342.5; DB 1; Length 182;
Best Local Similarity 46.4%; Pred. No. 7.5e-21;
Matches 77; Conservative 27; Mismatches 57; Indels 5; Gaps 3;

Qy 1 MSYLLGLFLQSSNFQCKLLQWLNGLRLEYCLKDRMNFDPPEIKQLQFOQKEDAAITY 60
Db 22 INYQLQLOERTNIRKQCELLQLNGKIN--LYRADFKIPMEM--TERMQKSYTAFAIQ 77
Qy 61 EMLQNIFAIFRODSSSTGWNTEIVNLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSL 120
Db 78 EMLQNVFLVRNFSSTGWNTEIVVRLDDELHQOTVFLKTVLEEK-QEERLTWEMSSTAL 136
Qy 121 HLKRYGGRILHYLKAKYSHCAWTIVRVEILNRYFINRLTGYLRN 166
Db 137 HLKSYVVRVQRYLKLKMYNSYAMVVRAEIFRNLIRLIRLNRNFQ 182

RESULT 7
JCS424
interferon beta precursor - rat
C:Species: Rattus norvegicus (Norway rat)
C:Date: 10-Jun-1997 #sequence_revision 18-Jul-1997 #text_change 09-Jul-2004
A:Accession: JCS424
R:Tokoyama, S.; Ohishi, N.; Shamoto, M.; Watanabe, Y.; Yagi, K.
Biochem. Biophys. Res. Commun. 232, 698-701, 1997
A>Title: Isolation and expression of rat interferon beta gene and growth-inhibitory effe
A:Reference number: JCS424; MUID:97271387; PMID:9126338
A:Accession: JCS424
A:Molecule type: DNA
A:Residues: 1-184 <YOK>
A:Cross-references: UNIPROT:P70499; UNIPARC:UPI000012D652; DDBJ:D87919; NID:G1616938; PI
C:Comment: This protein exhibits characteristic antiviral and antitumor activities.
C:Genetics:
A:Gene: IFNbeta
C:Superfamily: interferon alpha
F;1-21/Domain: signal sequence #status predicted <SIG>
F;22-184/Product: interferon beta #status predicted <MAT>

Query Match 38.4%; Score 335.5; DB 2; Length 184;

Best Local Similarity 45.8%; Pred. No. 2.8e-20;		Matches 76; Conservative 24; Mismatches 63; Indels 3; Gaps 2;	
QY	1	MSYNLGLFQRSNFCQKLLMQLNGRLYCLKDRMNFDPPEIKOLOQOFKEDAAALTIY 60	
Db	22	IDYKLOQFQSTSIRTCQKLLQQLNGRLN--LSYRTDFKIPMEVMPHSQMEKSYTAFAIQ 79	
QY	61	EMLONIFALFRDSSSTGWNTEIVENLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSL 120	
Db	80	VMLQNVLFVFRSNFSTGWNTEIVESLDELQOTELLEIIILKEK-OEERLFWVTSTTL 138	
QY	121	HLKRYGRILHYLKAKYSHCAWTIVRVEILRNPFYFINRLTGYLRN 166	
Db	139	GLKSYTRVQRYLKDKKYNYSYAMVVRAEVFRNFSIILRLNRNFQ 184	
RESULT 8			
IVHO22			
interferon alpha-II-2 precursor - horse			
N:Alternate names: EqIFN-alpha-II-2; EqIFN-omega-2; type I interferon			
C:Species: Equus caballus (domestic horse)			
C:Date: 28-Dec-1987 #sequence_revision 28-Dec-1987 #text_change 09-Jul-2004			
C:Accession: F24912			
R:Himmeler, A.; Hauptmann, R.; Adolf, G.R.; Swetly, P.			
DNA 5, 345-356, 1986			
A:Title: Molecular cloning and expression in Escherichia coli of equine type I interferon			
A:Reference number: A90956; MUID:87053170; PMID:3022999			
A:Accession: F24912			
A:Molecule type: DNA			
A:Residues: 1-195 <HIM>			
A:Cross-references: UNIPROT:P05002; UNIPARC:UPI000002CA65; GB:M14545; NID:g164217; PIDN:			
C:Superfamily: interferon alpha			
C:Keywords: antiviral; glycoprotein			
F:1-23/Domain: signal sequence #status predicted <SIG>			
F:24-195/Product: interferon alpha-II-2 #status predicted <MAT>			
F:24-122,52-162/Disulfide bonds: #status predicted			
F:101/Binding site: carbohydrate (Asn) (covalent) #status predicted			
Query Match 33.1%; Score 289; DB 1; Length 195;		Best Local Similarity 37.2%; Pred. No. 1.8e-16;	
Matches 61; Conservative 33; Mismatches 56; Indels 14; Gaps 1;			
QY	2	SYNLLGFQRSNFCQKLLMQLNGRLYCLKDRMNFDPPEIKOLOQOFKEDAAALTIYE 61	
Db	37	NFVLQGMBRIS-----AICLKDRKDFRFPQDMADGRQPPEAQAASVLHE 82	
QY	62	MLQNIFAFIRQDSSSTGWNTEIVENLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSLH 121	
Db	83	MLQIFSLFHTERSAAMNTLLDELCTGLRLQLEDLDTCLQEMGEESALGTVRPTLA 142	
QY	122	LKRYGRILHYLKAKYSHCAWTIVRVEILRNPFYFINRLTGYLR 165	
Db	143	VKRYFGRILHYLKKEKYSDCAWEIVRMEIMRFSSSANLQGLRL 186	
RESULT 9			
IVHO21			
interferon alpha-II-1 precursor - horse			
N:Alternate names: EqIFN-alpha-II-1; EqIFN-omega-1; type I interferon			
C:Species: Equus caballus (domestic horse)			
C:Date: 28-Dec-1987 #sequence_revision 28-Dec-1987 #text_change 09-Jul-2004			
C:Accession: E24912			
R:Himmeler, A.; Hauptmann, R.; Adolf, G.R.; Swetly, P.			
DNA 5, 345-356, 1986			
A:Title: Molecular cloning and expression in Escherichia coli of equine type I interferon			
A:Reference number: A90956; MUID:87053170; PMID:3022999			
A:Accession: E24912			
A:Molecule type: DNA			
A:Residues: 1-195 <HIM>			
A:Cross-references: UNIPROT:P05001; UNIPARC:UPI000002C9FC; GB:M14544; NID:g164230; PIDN:			
C:Superfamily: interferon alpha			
C:Keywords: antiviral; glycoprotein			
F:1-23/Domain: signal sequence #status predicted <SIG>			

F:24-195/Product: interferon alpha-II-1 #status predicted <MAT>		F:24-122,52-162/Disulfide bonds: #status predicted		F:101/Binding site: carbohydrate (Asn) (covalent) #status predicted	
Query Match 30.7%; Score 268; DB 1; Length 195;		Best Local Similarity 41.0%; Pred. No. 9.1e-15;		Matches 55; Conservative 26; Mismatches 53; Indels 0; Gaps 0;	
QY	31	CLKORMNFDPPEIKOLOQOFKEDAAALTIYEMLQNIFAIFRQDSSSTGWNTEIVENLLAN 90			
Db	52	CLKHRTDFRFPQEQIDGRQFPEAQATSVLQEMLOQIVLSLFHTERSAAMNTLLDRLLAG 111			
QY	91	VYHQNHLKTVLEEKLEKEDFTRGKLMSSLHKLKYYGRILHYLKAKYSHCAWTIVRVEI 150			
Db	112	LHQQLLEDLNTCLDEOTGEESALGTGVTGLAVKRYFRIRILYTEKKYSDCAWEIVRVDI 171			
QY	151	LRNFYFINRLTGYL 164			
Db	172	MRSFSSSANLQGLR 185			
RESULT 10					
IVHOA1					
interferon alpha-I-1 precursor - horse					
N:Alternate names: EqIFN-alpha-I-1; type I interferon					
C:Species: Equus caballus (domestic horse)					
C:Date: 28-Dec-1987 #sequence_revision 28-Dec-1987 #text_change 09-Jul-2004					
C:Accession: A24912					
R:Himmeler, A.; Hauptmann, R.; Adolf, G.R.; Swetly, P.					
DNA 5, 345-356, 1986					
A:Title: Molecular cloning and expression in Escherichia coli of equine type I interferon					
A:Reference number: A90956; MUID:87053170; PMID:3022999					
A:Accession: A24912					
A:Molecule type: DNA					
A:Residues: 1-184 <HIM>					
A:Cross-references: UNIPROT:P05003; UNIPARC:UPI000002C9F9; GB:M14540; NID:g164226; PIDN:					
C:Superfamily: interferon alpha					
C:Keywords: antiviral					
Query Match 30.2%; Score 264; DB 1; Length 184;		Best Local Similarity 36.7%; Pred. No. 1.8e-14;		Matches 55; Conservative 29; Mismatches 52; Indels 14; Gaps 1;	
QY	5	LLGFLQRSNFCQKLLMQLNGRLYCLKDRMNFDPPEIKOLOQOFKEDAAALTIYEMLQ 64			
Db	40	LLGQMRRIISPF-----CLKDRNDFGFPQEVDFGNQFRKPQAISAVHETIQ 85			
QY	65	NIPAFIRQDSSSTGWNTEIVENLLANVYHQNHLKTVLEEKLEKEDFTRGKLMSSLHLKR 124			
Db	86	QIFHLFSTDGSSAAWDESLDLKLYTGLYQQLEACLSQEVGVBEETPLMNEDSLLAVRR 145			
QY	125	YVGRILHYLKAKYSHCAWTIVRVEILRN 154			
Db	146	YFORIALYLBQEKYSPCAWEIVRAEIMRSP 175			
RESULT 11					
IVHOA3					
interferon alpha-I-3 precursor - horse					
N:Alternate names: EqIFN-alpha-I-3; type I interferon					
C:Species: Equus caballus (domestic horse)					
C:Date: 28-Dec-1987 #sequence_revision 28-Dec-1987 #text_change 09-Jul-2004					
C:Accession: C24912					
R:Himmeler, A.; Hauptmann, R.; Adolf, G.R.; Swetly, P.					
DNA 5, 345-356, 1986					
A:Title: Molecular cloning and expression in Escherichia coli of equine type I interferon					
A:Reference number: A90956; MUID:87053170; PMID:3022999					
A:Accession: C24912					
A:Molecule type: DNA					
A:Residues: 1-184 <HIM>					

[illegible]

A:Accession: G23753
A:Molecule type: DNA
A:Residues: 1-189 <HEN>
A:CROSS-references: UNIPROT:P05015; UNIPARC:UIP00000047763; GB:X02957; NID:g32653; PIDN:CJ
R:Torczyński, R.M.; Fuke, M.; Bollon, A.P.
Proc. Natl. Acad. Sci. U.S.A. 81, 6451-6455, 1984
A>Title: Human genomic library screened with 17-base oligonucleotide probes yields a novel
A:Reference number: A22068; MUID:85038533; PMID:6387705
A:Accession: A22068
A:Molecule type: DNA
A:Residues: 1-189 <TOR>
A:CROSS-references: UNIPARC:UIP00000047763; GB:K02055; NID:g184620; PIDN:AAAS2727.1; PID:
E:Gren, E.; Berzin, V.M.; Jansone, I.; Tsimanis, A.; Vishnevsky, Y.I.; Apsalons, U.
J. Interferon Res. 4, 609-617, 1984
A>Title: Novel human leukocyte interferon subtype and structural comparison of alpha inter
A:Reference number: I56313; MUID:85056523; PMID:6548765
A:Accession: I73334
A:Molecule type: mRNA
A>Status: preliminary; translated from GB/EMBL/DDBJ
A:Residues: 1-189 <RES>
A:CROSS-references: UNIPARC:UIP00000047763; GB:M28585; NID:g184643; PIDN:AAA36042.1; PID:
C:Genetics:
A:Gene: GDB:IFNA16
A:CROSS-references: GDB:I36357; OMIM:147580
A:Map position: 9p22-9p22
A:Superfamily: interferon alpha
C:Keywords: antiviral; cytokine; leukocyte
F:1-23/Domain: signal sequence #status predicted <SIG>
F:24-189/Product: interferon alpha-I-16 #status predicted <MAT>
F:24-122,52-162/Disulfide bonds: #status predicted

Query Match 29.8%; Score 260.5; DB 1; Length 189;
Best Local Similarity 37.2%; Pred. No. 3.6e-14;
Matches 55; Conservative 30; Mismatches 60; Indels 3; Gaps 2;

QY 20 LLWOLNGRLV--CLKDRWNFDIPEIKLQFOKEADAALTIVMLQNIFAIRQDSST 77
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :
DB 40 LLAQM-GRHSFCUKRDYDFGFQGVFNCGNQAKQAISAFHEMIQQTFNLSTKDSSA 98
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :
QY 78 GWNETIVMLANVYHQINHLTVLEEKLEKEDFTRGKLMSLLHLYKRYGYRILHYLKAKE 137
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :
DB 99 AWDETLLQKFYEQLFQQLNDLEACVTQEVGVSEIALMNEDSILAVRKYFORITLYLMGKK 158
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :
QY 138 YSHCAWTIVRVIELRNFPINRLTGYLR 165
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :
DB 159 YSPCAWEVVRAIERMSFSFSTNLQGLR 186
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :

RESULT 14
I37584
IFN-alpha-N-protein - human
C:Species: Homo sapiens (man)
C>Date: 04-Oct-1996 #sequence_revision 04-Oct-1996 #text_change 09-Jul-2004
C:Accession: I37584
R:Gren, E.Y.; Berzin, V.M.; Tsimanis, A.Y.; Apsalon, U.R.; Vishnevskii, Y.I.; Yansone, I.
.A.; Lozha, V.P.; Kavsan, V.M.; Efimov, V.A.; Sverdlov, E.D.
Dokl. Biochem. 269, 91-95, 1983
A>Title: A new type of leukocytic interferon.
A:Reference number: I37583
A:Accession: I37584
A>Status: preliminary; translated from GB/EMBL/DDBJ
A:Molecule type: mRNA
A:Residues: 1-189 <RES>
A:CROSS-references: UNIPROT:O14618; UNIPARC:UIP00000072A39; EMBL:X00140; NID:g32726; PIDN
C:Superfamily: interferon alpha

Query Match 29.8%; Score 260.5; DB 2; Length 189;
Best Local Similarity 37.2%; Pred. No. 3.6e-14;
Matches 55; Conservative 30; Mismatches 60; Indels 3; Gaps 2;

QY 20 LLWOLNGRLV--CLKDRWNFDIPEIKLQFOKEADAALTIVMLQNIFAIRQDSST 77
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :
||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| : ||| :

```

Db      40  LLAQM-GRISHSCLKDRYDFGFPQEQKQAQALSAFHEMIQQTFFNLFTSKDSSA 98
QY      78  GWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSJHLKRYYYGRILHYLKAKE 137
Db      99  AMDETLLDKFYIELFQQLNDLEACVTQEVGVEEIALMNEEDSLAVRVKVFQRTITLYLMGKK 158
QY      138 YSHCAWTIVRVVEILRNFEINRLTGYLR 165
Db      159 YSPCAWEVVRAEIMRSFSFSTNLQKGLR 186

RESULT 15
IVHOA2
interferon alpha-I-2 precursor - horse
N:Alternate names: EqfN-alpha-I-2; type I interferon
C:Species: Equus caballus (domestic horse)
C:Date: 28-Dec-1987 #sequence_revision 28-Dec-1987 #text_change 09-Jul-2004
C:Accession: B24912
R:Himmeler, A.; Hauptmann, R.; Adolf, G.R.; Swetly, P.
DNA 5, 345-356, 1986
A:Title: Molecular cloning and expression in Escherichia coli of equine type I interferon
A:Reference number: A90956; MUID:87053170; PMID:3022999
A:Accession: B24912
A:Molecule type: DNA
A:Residues: 1-184 <HIM>
A:Cross-references: UNIPROT:P05004; UNIPARC:UPI000002C9FA; GB:M14541; NID:G164218; PIDN:
C:Superfamily: interferon alpha
C:Keywords: antiviral
F:1-23/Domain: signal sequence #status predicted <SIG>
F:24-184/Product: interferon alpha-I-2 #status predicted <MAT>
F:24-122,52-162/Disulfide bonds: #status predicted

Query Match      29.7%; Score 260; DB 1; Length 184;
Best Local Similarity 36.7%; Pred. No. 3.8e-14;
Matches 55; Conservative 28; Mismatches 53; Indels 14; Gaps 1;

QY      5  LIGFLORSNFCQCKLLMQLNGRLEVCCLKRMNFDIPEIKQLQOPQKEDAAITVEMLO 64
Db      40  LIGQMRRIISPPS-----CLKDRNDFGFPQEVFGNGQFRKPAISAVHETIQ 85
QY      65  NIFAIFRQDSSSTGWNETIVENLLANVYHQINHLKTVLEEKLEKEDFTRGKLMSSJHLKR 124
Db      86  QIFHLFSTDGSSAAWDESLDKLYTGLYQQLTELEACLSQEVGVEETPLMNEDSLAVRR 145
QY      125 YGRILHYLKAKKEYSHCAWTIVRVVEILRN 154
Db      146 YFQRIALYLQEKYSFPCAWIEIVRAEIMRCF 175

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Search completed: December 21, 2005, 14:17:48
 Job time : 39 secs